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An EVALUATION OF THEIR
QUOTA POLICIES WITH SPECIAL
REFERENCE TO THE BROILER INDUSTRY

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(Signed) S. Mehdi Haider Rizvi

PERMANENT ADDRESS:

41 Moselle St.
Aylmer Park, Aylmer
Quebec

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MARKETING BOARDS IN CANADA--
AN EVALUATION OF THEIR QUOTA POLICIES
WITH SPECIAL REFERENCE TO THE BROILER CHICKEN INDUSTRY

by

© SAIYED M. H. RIZVI

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
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SPRING, 1974

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled, MARKETING BOARDS IN CANADA--AN EVALUATION OF THEIR QUOTA POLICIES WITH SPECIAL REFERENCE TO THE BROILER CHICKEN INDUSTRY submitted by SAIYED M. H. RIZVI in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Agricultural Economics.

Supervisor

F. Roseman

External Examiner

Date: April 9 1974

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M. H. Hawkins
Supervisor

F. Roseman

Michele Veeman

External Examiner

Date: April 9, 1974

ABSTRACT

The history of organized agricultural marketing in Canada is closely aligned with the history of farm organizations in general. Early Canadian farm organizations emphasized a farm management orientation, which started shifting to market orientated considerations as farmers felt that their bargaining position, vis-a-vis the more concentrated agribusiness sector, was deteriorating. Initially Canadian farmers attempted to correct the situation through voluntary marketing cooperatives which attempted to secure better prices for their products and to obtain an increase in marketing efficiency. However, they found, that there were limits to what could be accomplished by the organization and operation of marketing cooperatives based on voluntary membership.

It became more apparent that the very fact that membership in cooperatives was voluntary made it impossible to spread the burdens and benefits evenly among all producers of a commodity. Furthermore, it became evident that voluntary cooperatives could not exercise the degree of control necessary if certain kinds of marketing activities and objectives were to be under-

taken and achieved. Experience led Canadian farmers to conclude that what they needed was legislation that would permit a more "complete control" program over the supply of an individual farm commodity.

Based on the above background, the first producers' marketing board which intended to employ "supply control" as a form of supply management was established in British Columbia in 1927. Since then, there have been substantial increases in the number of marketing boards established on commodity bases in each province. The largest increase in their number and in the value of products sold under their jurisdictions occurred during 1955-1970.

Economic theory and the subsequent hisotrical evolution of marketing boards in Canada suggest that when quota policies are used for various farm products and if Canadian farmers sold (or produced) a smaller total quantity of a farm commodity, they should each receive a higher total price and a higher net return. According to this theoretical connotation, various Canadian marketing boards employed three different categories of quotas--production quotas, delivery quotas and marketing quotas. Marketing quotas were used for the largest number of farm products, and broiler chicken represented a case of the boards employeing the marketing quotas as a tool of "supply management".

The three most important provinces producing broiler chicken under marketing quota arrangements were British Columbia, Alberta and Ontario. Therefore the provincial broiler chicken producers' marketing boards operating in these provinces were used as case studies to evaluate the implications of quota policies used by the broiler marketing boards in Canada. The principal conclusions of the study indicate that the quota policies of provincial broiler marketing boards (i) succeeded in reducing price variations in the broiler sector and price stability increased at the producers' level after the implementation of quota policies, (ii) achieved stability at higher producer prices. In a cumulative effect, it was conducive to higher stability and improvement in broiler growers' income; (iii) it achieved stability and improvement in prices and incomes through the practice of equitable price treatment that ensured identical minimum prices to producers of the same quality of broilers; (iv) furthermore, it has restricted the industry's growth, maintained some excess capacity and contributed to a high level of concentration. However, it has reduced the take-over of farm production aspects of the industry by non-farm firms.

Despite the achievement of their objectives, the effectiveness of the quota policies was reduced because of the interprovincial flows that sometimes seriously disrupted the results of supply management. One

of the most important reasons for this problem was the lack of federal legislation to develop a national supply management problem. This problem can be solved by establishing the proposed National Broiler Chicken Marketing Agency in conformance with the Broiler Chicken Market Agreement accepted by all provinces.

ACKNOWLEDGEMENTS

Helpful criticism and guidance encourage improvement and progress in many areas of human endeavour, but this is espeically true in the process of research and education. The final version of this study is a result of the able criticism and guidance of Dr. M. H. Hawkins, the major professor who patiently advised, read and corrected this thesis at various stages. To him the writer wishes to express gratitude and thanks.

Valuable suggestions were made by Dr. J. J. Richter, Professor of Agricultural Economics, Dr. Frank Roseman, Associate Professor of Economics and Dr. M. M. Veeman, Associate Professor of Agricultural Economics. To them the writer offers special appreciation and thanks.

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Moreover, the writer expresses his thanks to Mrs. Meg Richeson and Miss Evelyn Shapka for editing the thesis and to the staff of the Department of Agricultural Economics and Rural Sociology, University of Alberta, for their cooperation throughout the completion of this work. Also, Mrs. Lynne Rogozenski, who worked arduously in typing the final draft of the thesis, deserves the writer's appreciation and thanks.

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CHAPTER I

INTRODUCTION

The Problem: Its Nature and Importance

Since World War II the chief instrument of agricultural marketing policy in Canada has been the Agricultural Marketing Act of Canada (1949) and subsequent legislation passed by various provinces. This legislative measure has been the legal device for the creation of marketing boards currently operating in all ten provinces in Canada.[1] Marketing boards have been considered as one of several instruments available to producers and government in the implementation of government farm income and price policies. The roles played by marketing boards have varied from being vehicles for advising and promoting sales and administrative directive to being active partners in molding and executing national and provincial farm policy.

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[1] A marketing board is defined as a "public body, set up under government legislation, to which are assigned various legal powers of compulsion over producers and, in some cases, also over the handlers and manufacturers of primary or processed agricultural commodities." M. M. Veeman, "New Zealand Marketing Boards: An Economic Analysis and Evaluation," (unpublished Ph.D. thesis, Dept. of Agricultural Economics, University of California, Berkely, 1971), p. 1.

Marketing boards, in general, have been viewed as a means of eliminating unnecessary competition among farmers. The intent in their establishment has been to organize producer agencies that would constitute "countervailing power" in agricultural commodity markets having only a few buyers.[1]

There is a wide spectrum of secondary objectives which can be served by marketing boards. Some of the important ones are included here:

(i) Marketing boards in their regulatory capacity can take steps to assure orderly marketing process.

(ii) As a focal point for the sector's cooperation, the marketing boards can undertake research, extension and other programs intended to improve production and marketing standards.

(iii) Marketing boards, particularly export boards, can initiate promotion and advertising campaigns aimed at market expansion at home and abroad.

(iv) In an attempt to bring about marketing efficiency, some of the boards can participate in, or even take charge of, certain parts of the marketing process--transportation, for example.

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[1] J. J. Richter, "Are Marketing Boards An Effective Countervailing Power?" *Agricultural Marketing Boards--Sixth Annual Workshop Report*, (Saskatoon: CAES, 1961). There was, in fact, a situation of imperfect competition or, more precisely, oligopsony and monopsony, facing agricultural producers. Faced with the situation of a few very large buyers fixing prices of products that did not seem to fit into the total market picture, the argument behind the creation of marketing boards was to strengthen the bargaining position of the farmers by creating "countervailing power".

However, the primary objective of marketing boards, that of creating "countervailing power," has been principally attempted through supply management. In Canada supply management is accomplished through the use of quota policies.[1] In the past several kinds of economic, legal and value conflicts have appeared in Canadian agricultural policy developments which have advocated the use of marketing quotas for Canadian farm products. There is now a further divergence of opinion and differing economic reasoning regarding the use of quotas. This divergence has arisen due to the complexity of marketing board quota operations and also due to a lack of understanding which exists in regard to the economic implications of supply or marketing controls on prices, incomes, sectoral growth, product supplies, trading positions and strategies for growth of the overall agricultural sector. In addition, several questions have been raised as to whether marketing boards implementing supply management through quota

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[1] The majority of quota policies envisage quota restrictions on volume of marketing per farm except in the case of the Ontario Tobacco Industry where supply controls embody restrictions on production. The quota policies used by Canadian marketing boards take various forms, each with its distinguishing characteristics. They will be discussed in Chapter IV.

2

policies (both production and marketing quotas) are the appropriate type of institutions to have such monopolistic powers. These questions are difficult to answer without empirical evidence relating to each of these specific and general aspects.

Moreover, the main assumptions implicit in the overall concept of supply management with respect to "stabilization" need to be analyzed in accordance with what is exactly implied and with notice taken of how its effects may be reflected on other variables that are not directly involved in the stabilization process.[1] The study took account of these aspects and has developed an empirical examination of the effects of the quota policies used by the marketing boards on several variables.

---

[1] An important basic assumption with respect to "supply management" is that of market stabilization (reducing price and income fluctuations). However, there are certain initial ambiguities involved in the overall notion of stabilization. The basic question refers to different aspects of production and marketing that could be stabilized; these may include primary producers' money prices, real prices, money income or real income. Similar connotation applies to the consumers.

Stabilization of any one of these variables may contribute little to the stabilization of others and may possibly even lead to the destabilization of another variable.

Beside reducing the fluctuations in price and income, "supply management" also implies an improvement in the level of prices which contributed to an increase in the level of income. This aspect has been an important constituent of supply management programs as used by marketing boards in Canada. M. M. Dawe, "An Economic Analysis of Marketing Boards with Particular Reference to New Zealand," (unpublished Research Essay, Department of Agricultural Economics, University of California, Berkeley, 1969).

Study Objectives

Within the framework of the problem stated above, the main objectives of the study were:

1. To review the economic background and history of the development of the Canadian marketing organizations for agricultural products and to analyze the nature of the legislative measures that led to the growth of marketing boards in Canada.

2. To develop the basic theoretical framework relevant to the operation of marketing boards.

3. To analyze the relevant theoretical implications of quota policies as used by the marketing boards.

4. To analyze the objectives of marketing boards in general and to study the selected broiler chicken producers' marketing boards as case studies, in particular, with a view to evaluating the success of the quota policies used by these marketing boards in achieving their objectives.

5. To present a brief analysis of the contemporary developments in the broiler chicken marketing arrangements, particularly with reference to the recent problems faced in interprovincial trade and price-cost relationships.

6. To provide suggestions and policy recommendations, in view of the analysis of the effects of the quota policies used by the selected provincial broiler chicken

producers' marketing boards and within the broader context of the proposed National Broiler Chicken Marketing Agency.

Hypotheses

It has been acknowledged that marketing boards were established in Canada to achieve several objectives. These objectives were used as a background against which were formulated the following hypotheses:

1. Marketing boards in Canada have evolved from circumstances that have been generated by price and income problems in the Canadian agricultural sector.

2. Canadian agricultural price and income problems necessitated developing an agricultural marketing policy embodying some of the features of supply management in order to achieve any enhancement of the countervailing power of the primary producer.

3. In addition to supply management, vertical integration can be considered as an alternate route to countervailing power. Since this alternative was politically unacceptable to the majority of agricultural producers, they accepted supply management as the second best alternative towards developing market power.

4. Quota policies have stabilized prices and incomes for producers.

5. Prices of farm products delivered to consumers have risen through the "cost of production" effect of supply or marketing quotas.

6. A change in the trade position coefficient for each province has occurred because of direct altering of production and supply volumes.

7. A shift in margin distribution between primary producers and wholesalers has occurred.

8. Quota policies have increased market concentration within the production sector but have reduced takeover of primary production units by non-farm firms.

9. Marketing and production quotas, as used by various marketing boards, have restrictive effects on sectorial growth.

Delimitation and Justification of the Study

The importance of this study seemed to be accentuated because the amount of knowledge that existed in this area was limited and scattered. Empirical knowledge about the implications of collective decision making by marketing boards on price and income improvement, supplies, trade position, growth and margins, etc., was lacking.

Within the limitations of time and other resources, the overall orientation of this study relates to the quota policies used by marketing boards in Canada, but the specific emphasis here was restricted to selected broiler chicken marketing boards operating in three provinces producing over 50% of total broiler supplies.

Procedure and Methodology

Within the limitations specified for this study, the analytical procedures employed focused first on marketing boards in general (extensive approach) and second on the quota policies of selected broiler chicken marketing boards as case studies (intensive approach). This dichotomization determined the nature of research and the scientific method used for each category.

Extensive Approach

Deductive argument, theory and literature sources were used to analyze the preliminary status of marketing boards in general. Since marketing organizational experience in Canada has been a temporal, moving process, evidence was judged within the historical context. The analysis of past events and developments provided possible evidence for the present situation and future developments. This was considered necessary both for testing value and for instrumental purposes in order to give the present analysis a close-knit sequential explanatory force. In addition, in conjunction with the historical analysis, qualitative description and analogical methods were used to explore the past and present legal, socio-economic and other influences that conditioned the general framework of agricultural marketing in Canada. The combination of qualitative description and analogical and historical methods provided a scientific background for conceptual reasoning and factual inquiry into the overall status of present-day marketing arrangements for Canadian farm products.

Intensive Approach

Within the same methodological framework used for the general analysis, the intensive approach resorted to individual case study and analysis to investigate the implications of the quota policies of three provincial broiler chicken marketing boards on variables indicated earlier. Quantitative analysis was used to establish the degree of association between several variables (for example, quota policies, production, marketing and price and income situation), while comparative analysis was used for studying the administrative, operational and policy aspects of broiler chicken marketing boards. Specific and general objectives for quota policies for the selected commodity groups were appraised from the results obtained using the economic analysis. Econometric analysis was used to study the structural characteristics of broiler demand and supply in Canada and a similar attempt was made for eggs to determine the difference between these two farm products.

Difficulties Encountered

Several difficulties were encountered in the process of this research. First, the lack of time-series and cross-sectional data on prices, incomes, use and prices of resource inputs, variations in size of quotas allocated, etc. created limitations for carrying out a more detailed analysis. Data on inter-regional commodity flows were difficult to obtain and, therefore, efforts were made to calculate the flows within the framework of the deficits and surplus estimated for each province. Detailed cost data were not available and, therefore, approximations had to be made with reference to ascertaining the impact of recent price and costs changes that confronted the producers in the Canadian broiler sector.

Outline of the Thesis

This thesis consists of seven chapters including the Introduction. Chapter II brings together the available information and the results of work already completed on marketing boards under the heading "Review of Literature". Chapter III sets out the background of marketing board development and outlines the socio-economic and political circumstances that led to the creation of marketing boards in Canada. It describes the federal and provincial legislation that empowered the producer-controlled marketing boards to develop supply management policies.

Chapter IV is an assessment of the importance and dimensions of marketing boards in Canada. Statistical information is provided to support the concept of the growing importance of marketing boards in Canadian agriculture. Chapter V contains an exposition of several theoretical models relevant to the implications of quota policies under different quota privilege forms.

Chapter VI deals with the nature and implications of the quota policies used by the individual provincial broiler chicken marketing boards selected as case studies. The main emphasis of this analysis is on the impact of supply management on variables such as supplies, growth of the industry, trade positions, price stability, margins, incomes, etc. The same chapter starts with the general background of the broiler sector in Canada and presents the econometric analysis of the demand and supply structure of the broiler chicken market in Canada.

Chapter VII provides conclusions and suggestions based on the results obtained from both the extensive and intensive analysis.

CHAPTER II

REVIEW OF LITERATURE

In general, the published material existing on the topic of marketing boards in Canada is sketchy and scarce. In a world context, however, there are several studies which analyze the relevant policies pursued by marketing boards in foreign countries.[1] Despite the lack of published Canadian research material, the review of available material along with some foreign literature serves two main purposes. First, it enhances an understanding of the objectives, problems and the implications of the operation of marketing boards within Canada. Secondly, it is useful in developing the analytical framework for this study.

---

[1] For example:

M. M. Veeman, "New Zealand Marketing Boards: An Economic Analysis and Evaluation," (Ph.D. Thesis, Department of Agricultural Economics, University of California, Berkeley, 1971); D. H. McKay, "Stabilization in Australian Agriculture: A Review of Objectives," *Australian Journal of Agricultural Economics,* Vol. 10, No. 3 (September, 1965); P. T. Bauer, "A Review of the Agricultural Schemes," *Economica,* Vol. XV, No. 8 (May, 1948) and *West African Trade* (Cambridge: Cambridge University Press, 1949); T. K. Warley, "A Synoptic View of Agricultural Marketing Organizations in the United Kingdom," *Agricultural Producers and Their Markets,* Edited by T. K. Warley, (Oxford: Basil Blackwell, 1967).

Definition of Marketing Boards

Initial review was made with regard to the definition of marketing boards as used in different situations. Several criteria could be devised as the test of completeness of a definition, but the most important criterion should be how far a definition explains all the characteristics and the functional status of a marketing board.

Within the limits of this criterion, the definition of a marketing board provided by Veeman[1] will be used in the text of this thesis. She defines a marketing board as a "public body, set up under government legislation, to which are assigned various legal powers of compulsion over producers and, in some cases also over the handlers and manufacturers of primary or processed agricultural commodities."[1] Interpreting the definition, it would include all organizations which are "public bodies legally vested with powers of compulsion over the marketing and/or production of farm products."

Several other definitions of marketing boards can be analyzed in conjunction with the one provided by

---

[1] M. M. Veeman, *Op. Cit.*, p. 1.

Veeman. Koh[1], in a comparative study of agricultural marketing legislation, defines a marketing board as a "producer controlled, compulsory, horizontal organization sanctioned by government authority through the instrumentality of enabling legislation to perform specific marketing operations of a particular agricultural product in the interest of the producers."[1] A similar definition is given by Abbott[2] who considered a marketing board as "a producer-influenced, compulsory organization receiving authority to operate from legislation to intervene and engage in various phases of the marketing of an agricultural commodity."

Koh's definition indicates that marketing legislation was initially written for the interest of producers but he also infers in his text that consumers enjoy its benefits in several ways. Stability, product development, orderly marketing, improving production and marketing standards and, above all, assured supplies of a product are elements in a marketing board's program that are conducive not only to the producers' interest but also to the interest of the consumers.

---

[1] T. H. Koh, *A Comparative Study of Agricultural Producer Marketing Legislation in Canada, Australia, United Kingdom, and United States,* Publication No. AE/64/65-11 (Ontario: Dept. of Ag. Econ., University of Guelph, n.d.)

[2] J. C. Abbott, "Agricultural Marketing Boards in the Developing Countries," *Journal of Farm Economics,* Vol. 49, No. 3 (1967).

Abbott's definition of a marketing board is restrictive in the sense that it outlines the scope of a marketing board only with reference to producers. It fails to specify the various phases of marketing in which a marketing board can legally intervene and engage. This creates an ambiguity in Abbott's definition in comparison to the one provided by Veeman.

In arriving at a comprehensive definition of a marketing board the question of "compulsion" is essential. As Padberg indicates: "The collective entity or bargaining group must be able to depend on the cooperation of all members in order to present a position of strength to external groups."[1] This cooperation, according to Veeman's definition, is achieved through the "compulsion" clause in the case of a marketing board. This aspect is also implicit in other definitions but, being crucial, it needs to be mentioned explicitly to distinguish a marketing board from a voluntary entity such as a cooperative.

In summary, because of its completeness and flexibility, the definition as presented by Veeman is accepted as defining the terms of reference for marketing boards throughout the thesis.

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[1] Daniel I. Padberg, "Organizational Needs for Collective Bargaining," *Bargaining in Agriculture: Potentials and Pitfalls in Collective Action,* Bulletin C-911 (Columbia: University of Missouri, Extension Division, June, 1971).

Classification of Marketing Boards

Closely associated with the question of the definition of a marketing board, a taxonomic arrangement that can be assigned to marketing boards in general is also important. Several marketing economists have developed a functional classification for marketing boards.

Morley[1] classified marketing boards into five categories based on major functions: (1) advisory and promotional; (2) quality control and coordinating; (3) price stabilizing; (4) export monopoloid and (5) domestic monopoloid. These classifications, however, are broad in nature and cannot be used directly to specify and classify individual marketing boards established on an individual commodity basis.[2] In addition, some degree of ambiguity is evident in these classifications. In practice, regulated marketing automatically implies an attempt to stabilize prices. Marketing boards are usually domestically monopoloid in practice, yet they can also be utilized to perform some additional exporting functions. Therefore, the classifications as given by Morley are too general in outline and repetition can be evidenced in the taxonomic breakdown making this classification irrelevant to our analysis.

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[1] J. A. E. Morley, "Marketing Boards," *Agricultural Producers and Their Markets,* Edited by T. K. Warley (Oxford: Basil Blackwell, 1967).

[2] A broad distinction is provided by Abbott between (a) non-trading boards which do not participate in the marketing process as buyers and sellers of the commodity in question and (b) trading boards. In Morley's definition, advisory and quality-control boards, as such, are nontrading. A price stabilization board may or may not engage in trade. It if does, it may do so along with other buying and selling enterprieses. "Monopoloid" boards, possessing varying degrees of power, may resort to various monopolistic practices. Inasmuch as they operate as trading boards, they are bound to constitute the sole buyer, domestic seller, and exporter of the commodity in question. Monopoloid boards may also act as nontrading boards which regulate and coordinate sales via quantity controls and fiscal measures rather than direct participation. J. C. Abbott, "Agricultural Marketing Boards in the Developing Countries," *Journal of Farm Economics,* Vol. 49, No. 3 (1967).

Wood[1] provides another classification according to: (1) legal status of marketing boards; (2) control over the board; and (3) the geographic domain. However, functional classification needs to be a realistic explanation of the characteristics of a marketing board in a given situation. Both Morley's and Wood's classifications are not fully specific and embody some features that could be eliminated by providing a more functional classification. After an analysis of the above classifications it was evident that a more specific classification was needed if it was to be of use in helping the policymaker develop a policy for the specific impact desired. A classification based on legislative authority and the major function carried out as developed by the author is as follows:

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[1] A. W. Wood, "Marketing Boards: Farm Justice or Consumer GYP?" (paper presented at the Annual Meeting of The Consumers' Association, University of Toronto, Ontario, 1966).

(1) Boards under federal jurisdiction, e.g., Canadian Wheat Board.

(2) Boards under provincial jurisdiction.

(i) Boards under marketing legislation, e.g., all producer-controlled marketing boards such as for broiler chicken, turkey, eggs, tobacco, vegetables, etc.

(ii) Boards under the Public Utility Act, e.g., all provincial milk boards.

(3) Boards with supply management provisions.

(i) With marketing quotas, e.g., broiler chicken, turkey, eggs, etc.

(ii) With production quotas, e.g., Ontario Flue-Cured Tobacco Marketing Boards and the Provincial Milk Marketing Boards.

(iii) With delivery quotas, e.g., British Columbia Vegetable Marketing Board and Canadian Wheat Board.

(iv) With a combination of two or more of the above.

(4) Boards with advisory and quality control provision only (nontrading board).

(5) Boards with provisions to export the products--most marketing boards fall into this category.

(6) Commissions and agencies.

(i) Under federal legislation, e.g., Canadian Dairy Commission and Central Egg Marketing Agency.

(ii) Under provincial legislation, e.g., Alberta Cattle Commission, etc.

This classification provides an arrangement to understand the characteristics of the marketing boards operating in Canada both within the federal and the provincial jurisdictions.

The Evaluation of Marketing Boards

Pertaining to the United Kingdom, Bauer[1] suggested that the establishment of marketing boards should be preceded by quantitative investigation of the economies that are expected to be achieved by the elimination of competition and the increasing scale of operation. Though Bauer's suggestion is appropriate, he failed to specify the nature of the quantitative analysis required in this context.

Bauer did not appear to recognize the nature of the problems that would be involved in making such quantitative investigations, especially due to shortage of data and complexity of objectives. Where a marketing board (for example, a broiler chicken marketing board in Canada) is identifiable with a certain program, e.g., stabilization, it may be suggested that the commencement of such a program should be preceded by short-term and long-term supply and demand projections for the regulated commodity and a periodic effort should be made to study how the board's stabilization programs would affect the structure, conduct and performance of the broiler industry. Marketing board stabilization programs need to be looked upon as a reform aimed at far reaching changes in market structure, leading to an improvement in conduct and performance in the whole industry. The source of possible confusion in this respect would be a failure to undertake the required quantitative analysis regarding the impact of the stabilization program. Such an analysis is required for both the pre-board and post-board period in order to know the comparative impact of the stabilization programs implemented through the marketing boards. This observation and analysis provided a lead for the inquiry conducted in this thesis.

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[1] P. T. Bauer, "A Review of the Agricultural Schemes," *Economica*, Vol. XV, No. 8 May, 1948).

Warley[1] explores the role of marketing boards in comparison to voluntary cooperatives in achieving price and income objectives for agricultural producers in the United Kingdom. He further discusses the possible means of raising producers' income and differentiates between those means that unequivocally require compulsory participation through marketing boards and those means which might be carried out through voluntary organization such as cooperatives. Warley's paper emphasizes the economic gains that the cooperative organizations vis-a-vis the compulsory organizations in the form of marketing boards could achieve. Warley's conclusion favouring the role of cooperatives is inconsistent with the conclusions outlined in this thesis. The paper does not provide a comparative analysis as to what would have happened if there were only cooperatives and no marketing boards. The conclusion of Warley's paper lacks empirical evidence and needs to be substantiated by a more intensive cross-sectional analysis, dichotomizing the sectors covered by the marketing boards and by the cooperatives. The comparative results may be useful in providing definite conclusions as to the effectiveness of the voluntary cooperatives as compared to the compulsory marketing boards.

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[1] T. K. Warley, "A Synoptic View of Agricultural Marketing Organizations in the United Kingdom," *Agricultural Producers and Their Markets,* Edited by T. K. Warley (Oxford: Basil Blackwell, 1967).

A review of literature on the economic implications of marketing boards in the developing countries indicates several results. First, some marketing boards have played a useful role in stabilizing producer prices and incomes. Secondly, some of these boards have played an important role in mobilizing savings for economic development. As Helleiner[1] pointed out, Nigerian Marketing Boards have been, and continue to be, an extremely effective instrument for the mobilization of savings for government-sponsored economic development. Thirdly, reduction in the number of middlemen has in some cases enabled the producers to obtain a higher price than they would otherwise have received. Fourthly, it is claimed that one effect of control has been to improve standards of quality of farm products.

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[1] G. H. Helleiner, "The Fiscal Role of Marketing Boards in Nigerian Economic Development, 1947-61," *The Economic Journal*, Vol. LXIV, No. 295 (September, 1964).

An analysis relevant to the topic of farmers' income and price problems has been made by Bauer and Paish.[1] In this paper, Bauer and Paish critically analyze the policies pursued by the boards and evaluate the final results and their implications. They argue the undesirable effects of the wide short-term producer price and income fluctuations that prevailed before the boards were established in many stabilization operations.

One of the more comprehensive papers produced by the C.I.O.[2] outlines the development and structure of agricultural marketing in the United Kingdom. The evolution of agricultural marketing is considered a series of responses to change, both at home and abroad. On one hand, government efforts have been directed toward securing for farmers a countervailing influence against the more highly organized foreign producers and large-scale domestic purchasers, and, on the other hand, toward ensuring fair prices and protecting the interest of the consumer.

Yonde and Helmberger[3] illustrate that cooperative marketing is one way in which farmers can gain market power. However, it is not made clear whether the associated market results are thought to be beneficial to farmers alone or to society as a whole and whether the effects are to come from displacing monopsonistic powers in procurement, from acquiring monopoly power in final product sales, or from both. They explore some of these issues and briefly consider their implications for antitrust policy aimed at cooperatives in the United States. In conclusion, they see little objection to cooperative dominance in procurement in local markets. So long as farm industries have atomistic structures, cooperative marketing is particularly desirable where concentration in procurement is necessitated by economies of scale in marketing.

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[1] P. T. Bauer and F. W. Paish, "The Reduction of Fluctuations in the Incomes of Primary Producers," *The Economic Journal,* Vol. LXII, No. 284 (December, 1952).

[2] Central Information Office, *Agricultural Marketing in Britain,* R.5779 (London: C.I.O., 1967).

[3] James G. Yonde and Peter G. Helmberger, "Marketing Cooperatives in the U.S.: Membership Policies, Market Power, and Antitrust Policy," *Journal of Farm Economics,* Vol. 48, No. 3, Part II (August, 1966).

Dealing specifically with supply control, Welch's[1] paper demonstrates the impact of supply control with marketable quotas and shows the importance of risk and uncertainty. Peculiar to this work is production considered as a stochastic variable which demonstrates that supply control under conditions of uncertainty results in social costs above those predicted by certainty analysis. Welch's work especially emphasizes: (1) the variance of the implicit price the producer receives for his product, and

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[1] Finis Welch, "Supply Control With Marketing Quotas: The Cost of Uncertainty," *Journal of Farm Economics*, Vol. 49, No. 3 (August, 1967).

(2) the effects of supply control in the equilibrium quantity stored. The optimality of storage in a competitive market is demonstrated; it is argued that as equilibrium storage is increased by introducing supply control, the increased costs should be included in approximating the welfare cost of the policy.

Farrell's[1] paper entitled *New Dimensions and Aggressive Use of Marketing Orders* is comprehensive. Marketing orders and agreements in the course of nearly 30 years have come to occupy an important position within the United States in some sectors of agriculture.[2] An outgrowth of voluntary programs spearheaded by agricultural marketing cooperatives, marketing orders and agreements were conceived during the 1930's to redress the chronic imbalance between the supply and demand for farm products and to bring about more systematic marketing of farm products. Marketing orders and agreements are unique types of public programs for agriculture. Administratively, they represent a fusion of the regulatory power of government and self-administration by producers and, frequently, handlers of agricultural commodities. Legislation providing for orders is enabling in nature. The ecnomic rationale is derived from certain characteristics of agriculture and markets for agricultural products. Marketing order legislation in the United States has been developed as a means of providing producers with market or bargaining power to collectively improve their position in the market for farm products.

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[1] J. K. R. Farrell, *New Dimensions and Aggressive Use of Marketing Orders* (Washington: Marketing Economics Division, ERS, United States Department of Agriculture, 1968).

[2] This is mainly true in the case of organization and competition in the fruit and vegetable industry. More than 100 orders for fruits and vegetables have been initiated since 1933 under the authority of the Agricultural Adjustment Act of 1933 (as amended) and the Agricultural Marketing Act of 1937 (as amended) and now includes various other licenses. A large number of orders and agreements have been formulated under state legislation, particularly in the Pacific Coast states and Florida. In the period 1933-65, 86 orders were initiated under California legislation alone. In early 1968 there were nearly 100 marketing orders for fruits and vegetables effective under the Agricultural Marketing Agreement Act of 1937 and the enabling statutes provided by ten states. In addition, there were 74 federal milk orders in effect nationally in 1968.

Some of the earliest references[1] to Canadian farm income and price policies executed through marketing boards can be found in various Canadian economic histories. These books describe in an uncritical manner historical trends and circumstantial background for the creation of various programs. A somewhat more critical analysis appears first in Perkins'[1] paper that not only analyzes the situation and problems of marketing boards but also provides a theoretical framework involved in market control with reference to Ontario.

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[1] W. T. Easterbrook and H. G. J. Aitken, *Canadian Economic History* (Toronto: The MacMillan Co., 1956); W. M. Drummond and W. MacKenzie, *Progress and Prospects of Canadian Agriculture* (Ottawa: Royal Commission on Canada's Economic Prospects, January, 1957); and Federal Task Force on Agriculture, *Canadian Agriculture in the Seventies* (Ottawa: Queen's Printer, 1969).

One of the earliest papers with an analytical perspective on marketing boards in Canada is by Marshall and Perkins.[1] Its contents relate to the operation of the Ontario Cheese Producers' Marketing Board, especically with reference to the discriminating pricing operations of the Board during the 1951-57 period. The paper outlines the reasons why the board made "a limited contribution to the welfare of the cheese industry" during 1937-1951 period. Discussing the merits and demerits of the two-price system, Marshall advocates "the stronger the organization's monopolistic power both to control its own level of production and to keep out competitors, the more able it would be to maintain the high prices and revenues obtainable from the operation of a two-price system."

Concerning the question of collective action,

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[1] R. G. Marshall and B. B. Perkins, "The Operations of the Ontario Cheese Producers' Marketing Board," *Proceedings of Cooperation and Marketing Conference* (Guelph: Department of Agricultural Economics, Ontario Agricultural College, December, 1958).

Campbell's[1] exposition on collective bargaining in Ontario agriculture relates to the problem and potentials of important questions involved in a marketing scheme. A more comprehensive account of marketing boards as "a method of collective action" is provided in Marshall's[2] paper. Marshall outlines the nature of the problems involved by recognizing that the purpose and methods of the existing marketing boards differ so widely that they permit few generalizations. There is the tendency to propagate the call for marketing boards by means of a single formula to solve what is obviously a complex of problems and issues which might better be considered separately for each commodity.

Institutional concepts involved in the overall practice of marketing controls exercised through marketing boards in Canada is a crucial point that Wood[3] considers in his paper. Wood claims that collective bargaining through marketing boards enhances producers' income, thereby probably shifting the burden mainly to consumers. This is caused by changing the terms of trade between specific commodity groups in agriculture and other sectors of the economy. If the techniques of marketing boards are abused, they are likely to cause distortions in resource allocation and income distribution within agriculture.

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[1] D. R. Campbell, "Collective Bargaining in Ontario Agriculture and Industry," *Canadian Journal of Agricultural Economics,* Vol. 6, No. 1 (November, 1958).

[2] R. G. Marshall, "Marketing Boards as a Mathod of Collective Action," *Proceedings of Marketing and Cooperation Workshop* (Guelph: Department of Agricultural Economics, Ontario Agricultural College, January, 1964).

[3] A. W. Wood, "The Marketing Board Approach to Collective Bargaining," *Journal of Farm Economics,* Vol. 49, No. 5 (December, 1967).

Apart from economic necessities and constraints, it is likely that major constitutional, political or administrative problems may be created. These problems may arise independently or jointly; most often the former pattern predominates. This kind of realization suggests that the subject of market control must be pragmatically examined. Wood[1] provides this analysis in another paper dealing with noneconomic factors relating Canadian marketing conditions and problems. He examines the market control programs and indicates that their effectiveness in increasing returns to producers by restricting output or sales may not be effective if the consumers readily resort to substitutes. Wood suggests that there are ways other than direct of raising of price in which market control programs may benefit producers. Control devices that are used to streamline or rationalize marketing activities may lower selling costs.

Still, Wood's papers lack analysis of Canadian economic goals that are set for agriculture in general and supply management in particular.

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[1] A. W. Wood, "Problems of Market Control," (lecture presented to Western Canadian Farm Leaders Conference, Banff, Alberta, 1967).

Dealing with Canadian wheat policy, Kristjanson[1] outlines the successes and failures of Canadian government policy on wheat marketing and transport within the context of marketing boards. Proposals to offset the market system by price subsidies or a two-price system are rejected. There is room for imaginative marketing boards and for measures to promote efficiency and reliability in wheat handling and shipping. Since competition in these phases of the wheat economy is virtually absent, public ownership of elevator facilities and the establishment of a public corporation especially charged with shipping grains is suggested. During recent years, a shift towards marketing rather than production is emphasized.

This seems to be justified in the sense that increased stress on market demand, market development and market organization has become evident during the past two decades. This shift may be termed a shift from supply to marketing and an associated emphasis on supply management grew along with it.

Hiscocks[2] has recognized this shift in his analysis of supply management and orientates the salient points of the supply and demand situation in Canadian agriculture. Techniques of supply management, problems and limitations, legal obstacles, opportunities, etc. are explained in this paper, but still an empirical content is lacking.

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[1] Kristjanson, "Canadian Government Policy and the Wheat Economy," (Western Farmers Conference, University of Saskatchewan, Saskatoon, 1967).

[2] G. A. Hiscocks, "Supply Management, Definition, Techniques and Implication," *Canadian Farm Economics*, Vol. 5, No. 2 (June, 1970).

Two specific papers relate to Campbell[1] and Walker[2]--the former being specifically on tobacco quota policies and the latter being in general on quota policies as used by the Canadian boards. Campbell, outlining the importance of marketing boards in Canada, suggests that production control[3] introduces a host of interesting problems in economic theory, as well as in practical operations. With a virtual monopoly on Canadian production, high tariffs, and rapidly increasing demand, the Ontario Flue-Cured Tobacco Marketing Board has restricted output to a level far below that which would have occurred without such a program. The program has caused substantial capital gains for those with quota rights and also some degree of misallocation of resources on a wide scale. This paper gives a theoretical exposition of the problems involved but does not contain any quantitative analysis in conjunction with the theoretical models.

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[1] D. R. Campbell, "The Economics of Production Control: The Example of Tobacco," *Canadian Journal of Economics,* Vol. II, No. 1 (February, 1969).

[2] H. V. Walker, "Marketing Boards and Quota Policies for Canadian Farm Products: An Appraisal of Performance," *Canadian Journal of Agricultural Economics,* Vol. XIV, No. 2 (June, 1968)

[3] Ontario Flue-Cured Tabacco Marketing Board is the only marketing board that uses production control.

Slightly deviating from the regular pattern of available literature on marketing boards, Loyns'[1] work on "economic considerations in pricing and quotas under regulated marketing" is an addition to the theoretical area --an attack on some of the conventional wisdom surrounding marketing boards operating in Canada. His theoretical approach is innovative and proposes a new alternative to existing quota allocation schemes. This refers to the competitive cost bidding "procedure" and "comparative advantage" clause as written in Bill C-176. Loyns claims that the competitive cost bidding approach is one that would generally satisfy the intent of the legislation and suggests it as a feasible alternative approach to quota allocation.

Richter's[2] exposition of various political aspects of the economic organization of an industry clarifies doubts and issues on the nature and causes of changes that have been a prominent characteristic of Canadian agriculture. It suggests guidelines for policymakers in agriculture in general and in the marketing sector in particular.

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[1] R. M. A. Loyns, *Economic Considerations in Pricing and Quotas Under Regulated Marketing*, Research Bulletin No. 72-4 (Winnipeg: University of Manitoba, 1971).

[2] J. J. Richter, "Political Aspects of the Economic Organization of an Industry," *Market Regulation in Canadian Agriculture*, Occasional Series No. 2 (papers presented at the Marketing Board Seminar, Winnipeg, January, 1972).

Veeman[1] asserts that use of quotas as a mechanism of stabilizing market supplies and prices is a useful marketing board activity in some circumstances. Such an arrangement provides the producers with a degree of bargaining power, justified and appropriate enough when confronting a monopsonistic purchasing sector. With qualifications, however, she suggests certain limitations to supply management techniques. The supply restrictive quota schemes are utilized on a provincial level by a number of Canadian marketing boards and their use for some products on a national basis is likely.

It is apparent that some means of implementing such schemes are more desirable than others. Direct quota plans are preferred to indirect quota plans which can also be used for negotiable quota techniques. Veeman's criticism of applying supply-restricting national quota schemes on the basis of historical production patterns is based on the likelihood of damage to efficient interregional resource allocation. She suggests interprovincial quota transfers on a negotiable basis. Despite the administrative difficulties, it is suggested that allocation of any quota expansion between provinces should be made on the basis of objective measures of their relative competitive advantage in production and marketing the quota-controlled commodity to prevent frozen provincial patterns of production.

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[1] M. M. Veeman, "Alternative Techniques of Quota Regulations by Marketing Board Actions," *Market Regulation in Canadian Agriculture,* Occasional Series No. 3 (papers presented at the Marketing Board Seminar, Winnipeg, January, 1972).

Marketing Boards and Countervailing Power

Traditionally, farmers in Canada have been considered "price takers" by virtue of their accepting prices determined in competitive markets for the farm products they grow and sell. The above condition with regard to pricing resulted from the fact that agriculture was considered an industry characterized by a large number of producers, each producing a small proportion of the aggregate supply which made them incapable of affecting prices by changing their individual output.

The distinction between the competitive nature of agricultural markets and markets of other industries has long been a matter of concern to farmers. Thus Canadian farmers became interested in devising programs to lift their marketing from a regime of price competition to that of a monopolistic condition in which they could help to establish their own minimum prices. If accomplished, this procedure was expected to place them in a marketing environment similar to that of other major industries. This goal was expected to be achieved through supply management where marketing/production could be restricted to levels consistent with demand and the established minimum price. In addition, the programs embodying supply management were expected to provide the farmers with countervailing power. According to the conviction of farmers, the countervailing power generated through supply-price effects of a supply management program would maintain or improve farm incomes at desired levels and generate terms of trade which would improve the market interface relations between buyers and sellers of agricultural commodies.

The question of supply management and countervailing power has been discussed and analyzed in various papers. One comprehensive attempt was made by Richter in 1961.[1] Richter provides a specific analysis of the socio-economic and political background of the creation of marketing boards and discusses how these organizations enhanced the countervailing power of the member farmers. His analysis points out that there was, in fact, a situation of imperfect competition or, more precisely, oligopsony and monopsony, facing agricultural producers. In this situation where a few large buyers fixed prices of products that did not seem to fit in the total market picture, the argument behind the creation of marketing boards was to strengthen the bargaining position of the farmers by creating countervailing power.

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[1] J. J. Richter, "Are Marketing Boards An Effective Countervailing Power?" *Agricultural Marketing Boards—Sixth Annual Workshop Report* (Saskatoon: CAES, 1961).

The conclusions of Richter's paper appear relevant when the operation and success of the marketing cooperatives in generating the required countervailing power was analyzed. Cooperatives in Canada were formed by producers for the cooperative performance of various marketing activities. Voluntary cooperation was involved in both buying and selling of farm products through traditional marketing channels. Most of them were designed to achieve efficiencies in performance of various marketing functions but their voluntary status did not generate enough countervailing power because of the scope of their coverage over total farm output. Canadian producers, therefore, viewed marketing boards as a practical means of improving their bargaining power in the marketplace.

Similarly, Brandow[1] in his paper "Market Power and Its Sources in the Food Industry" defines market power in terms of a firm's ability to affect directly other participants in the market or such market variables as prices and promotion policies. His paper reveals the distinction between short-run and long-run power and between offensive and defensive power. He identifies more than a dozen sources of power in the food industry. Of these, a major market share is usually necessary, and a large market share is sufficient in the short run. Market power is not equivalent to the ability to make high profits, though that may be one of its effects, and this suggests that quota prices are not reliable indicators of market power.

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[1] G. E. Brandow, "Market Power and Its Sources in the Food Industry," *Journal of Farm Economics*, Vol. 51, No. 1 (February, 1969).

Besides supply management there are other ways to increase countervailing power. Vertical integration, market agreements, contracts and market orders may be regarded as potential means of achieving the degree of bargaining power. Several papers explaining the theoretical links involved in these techniques are available. Two papers with regard to the theoretical implications of vertical integration are those of Burstein and Vernon and Graham.[1] These authors analyze the implications of generating monopoly effects through vertical integration. The vertical merger permits the integrated firm to achieve efficiency in factor utilization and to capture additional profits.[2] This can be regarded as an effective arrangement to increase the countervailing power under the assumption of a variable proportion isoquant.

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[1] See: M. L. Burstein, "A Theory of Full-Line Forcing," *Northwestern University Law Review*, Vol. 55, No. 1 (1960); J. M. Vernon and D. A. Graham, "Profitability of Monopolization by Vertical Integration," *Journal of Political Economy*, Vol. 79, Part 2 (1971).

[2] Also the review of the theory of monopoly was made from: J. K. Galbraith, "Monopoly and the Concentration of Economic Power," *A Survey of Contemporary Economics* Edition 13, Vol. 1 (Published: American Economic Association, 1970). This review prepared a background for the monopoly models discussed in Chapter 5.

Objectives of Stabilization Schemes

Stabilization schemes implemented through the marketing boards technique originated in Australia during the 1920's and since then, literature on various aspects of agricultural marketing programs has been emerging. With reference to the objectives of stabilization schemes --a framework used for analysis in the thesis--McKay's paper is relevant. McKay categorizes the objectives of marketing boards into four different sets:[1]

(1) Income Objectives--to raise farm living standards; to provide security and comparability with non-farm income.

(2) Price Objectives--to guard against rising prices; to provide fair and stable prices of a minimum level and to give orderly marketing.

(3) Production Objectives--to produce enough for the domestic and export requirements to encourage efficient production in the most favourable areas.

(4) More General Objectives--to help industries to adjust to a changed market situation and to offset effects of depressed conditions that are expected to be temporary.

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[1] D. H. McKay, "Stabilization in Australian Agriculture--A Review of Objectives," *Australian Journal of Agricultural Economics*, Vol. 10, No. 3 (September, 1965).

However, this division of the objectives seems to contain redundant elements. The "income objective" is the principal goal that stabilization programs try to achieve. Price and production objectives are simply the means used to achieve the income objective. In general, income objectives are largely achieved through the impact of stabilization schemes on price. McKay does not provide this distinction and his analysis, therefore, confuses the matter of cause and effect relationships involved in the stabilization programs. His paper further fails to indicate the nature and magnitude of success of various programs used for achieving stability of prices and income in Australian agriculture.

While stabilization is emphasized by McKay as desirable, there could be several ambiguities involved in the overall concept of stabilization. The concept of stabilization is meaningless without reference to a specific period and also without reference to the relation between the price and income envisaged under stabilization schemes and the open-market situation. Stabilization may also refer to several variables like prices, money income or real income. Stabilization of any one of these may actually destabilize the others. It needs to be ascertained first what variable is to be stabilized and then to devise methods to measure the net or real effect of this stabilization. There may also be some fundamental difficulties with measurement. McKay does not indicate whether a large number of frequent and small changes represent a greater or lesser measurement of stability than a smaller number of large and discontinuous jumps. The latter case is more evident in most of the stabilization schemes. McKay fails to clarify some of these crucial aspects.

Marketing Boards: Summary Comments

Price and income problems in agriculture are mainly caused by the inelasticities of agricultural supply and demand, especially the inelasticities of short period supply. When fluctuations in producers' income are due to changes in price,[1] marketing boards can play an important role. Intervention to maintain incomes when prices are low and to restrict them when prices are high can take several forms. The restriction schemes such as marketing quotas or production quotas or quotas on exports and imports constitute some of the most effective regulatory measures. These measures have been used in many countries all over the world for the last 50 years and the results of these techniques have been mixed. For example, according to Bauer and Paish, in the West African marketing system[1] the net outcome of these regulatory programs used to maintain or stabilize prices and incomes has been, in general, restrictive because of the existing asymmetry in their execution. In periods of low prices efforts to maintain prices and incomes were frequently accompanied by measures to restrict output (or at least the supply reaching consumers--supply management); otherwise the assistance to producers might increase supply. But no comparable compensatory action was possible to offset the adverse effects on output of measures taken to restrict producer prices and incomes in periods of high prices. Thus, marketing board policies tended to restrict output of primary products both in periods of low and high prices- in the former in order to raise prices received by producers, and in the latter as the result of keeping them down. These results are particularly illogical in a developing country and may generate a long-term trend in the direction of an increasing shortage of primary products, especially foodstuffs, in relation to the growth of population and to the output of a growing processing industry. In such cases, other government actions to assist primary producers may be more conducive. Some of the relevant ones could be straight subsidies, granting monopoly powers to farmers without the power to restrict production and entry or to practice price discrimination; stock holding schemes, etc.; levy subsidies (duties, the proceeds of which could be used to subsidize home producers); and even tariff protection.

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[1] Price fluctuations are, of course, not the only reason for the instability of incomes of primary producers in developing countries. Variations in weather conditions or in the incidence of pests frequently cause wide fluctuations in output. When the output of a given area forms a large proportion of the total supply available to a particular market, or where the output of competitive areas is similarly affected, the loss of income due to a smaller output may be partly, wholly or even more than wholly offset by higher prices. Where, however, the area affected is in competition with other areas which have not suffered similarly, the fall in output will not be compensated by higher prices, and producers' incomes will fall. Nevertheless, it seems that unless they are due to a major natural disaster, variations in producers' incomes caused by crop fluctuations rarely induce governments to take offsetting measures. There are, however, offsetting measures to crop reduction, i.e., crop insurance.

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[1] P. T. Bauer and F. W. Paish, "The Reduction of Fluctuations in the Incomes of Primary Producers," *The Economic Journal,* Vol. LXII, No. 248 (December 1952).

Several limitations of the above mentioned measures, however, can be analyzed. The use of these actions may depend on the budgetary position of the governments, the distribution of political forces, the attitudes of the farmers towards government intervention, etc. The form and scope of these methods may also be affected by such factors as the relation between home-produced supplies and imports, the position of the particular product in the national economy, etc. In the case of an export crop, the use of tariffs or restrictive quotas on domestic production may not be useful. These remarks are relevant to analyzing the farm price and income problems that confront the primary producers in Canada. In Canada, policy measures designed to maintain or raise producers' incomes by restricting supplies may consider the crucial points outlined in the preceding paragraph. The analysis presented in Chapter 6 incorporates these considerations.

Similar to Bauer and Paish's attempt, Helleiner[1] examined Nigerian marketing boards. He concluded that marketing boards could be responsible for a reduction in the number of middlemen in the marketing system enabling producers to obtain a price that they would not otherwise have received. Regulated marketing through the marketing boards could also improve the quality of the regulated farm products. In addition, the policies of the marketing boards had been an effective instrument in the mobilization of savings for government-sponsored development programs.

Helleiner's paper emphasizes the positive effects and lacks a rigorous treatment of the problems involved in generating these effects. Like Bauer and Paish, it does not provide proposals for reducing the violence and magnitude of the temporary fluctuations in the incomes of primary producers. These fluctuations can be generated due to variations in prices or in the size of the crops. There was a need to suggest what methods could reduce fluctuation in the primary producers' prices and incomes with as little effect as possible on the rate of adaptation of supply to long-period changes in demand. A stabilization program that does not take into account this aspect would be classified as ineffective. Moreover, the empirical contents of these papers are not adequate. Most of the conclusions are theoretically analyzed and proposals for a self-adjusting method to smooth fluctuations in incomes, rather than in prices, needed to be empiricized further by using time series and cross section analysis for the crops concerned.

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[1] G. H. Helleiner, "The Fiscal Role of Marketing Boards in Nigerian Economic Development, 1947-61," *The Economic Journal*, Vol. LXIV, No. 295 (September, 1964).

Veeman's study on New Zealand marketing boards presents an analysis and evaluation of marketing boards policies as used in the New Zealand agricultural sector. Several farm products fall under their jurisdictions but the study concentrates on manufactured dairy products, milk, meat and wool. The specific goals of marketing boards as outlined for this country are approximately the same as for other countries. These are : (1) increasing producer prices and incomes, (2) stabilizing fluctuations in producers' prices and incomes, and (3) providing some measure of equality of market opportunities or market returns between producers. The concluding section of the study includes a general discussion of the various means which marketing boards may use to increase producer prices and incomes. These procedures are evaluated in terms of their effects on other sectors of the economy. As such, this study provided insights for developing the framwork of inquiry presented in this thesis.

In summary, the text has attempted to develop a definition of a marketing board which is relevant to the following discussion. In addition, a market classification has been introduced which focuses on jurisdiction and market functions. Its introduction should be useful in narrowing and defining the ensuing discussion. The assorted views of several authors have been utilized in evaluating the role, objectives, functions and successes of marketing boards. Finally, the text has briefly discussed the role of the marketing boards in resolving issues within the concepts of countervailing power and stabilization schemes.

CHAPTER III

BACKGROUND TO THE DEVELOPMENT OF MARKETING BOARDS

Initiation of Cooperatives in Canada

The history of organized agricultural marketing in Canada is closely aligned with the history of farm organizations in general. Canadian economic historians have recorded a number of farmers' movements and government involvement in the early period of immigration and settlement.[1] The early emphasis of these movements was mainly in the farm management area. Later farm people started shifting their attention to a market oriented policy as producers felt that their countervailing power vis-a-vis the more concentrated agribusiness sector was deteriorating.

In the latter part of the 19th century Canadian farmers sought increased selling prices through joint action of various kinds and thus gave rise to the formation of several cooperatives. Table 3-1 traces the development

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[1] Appendix A gives important historical sequences in the development of agricultural organization in Canada and outlines the increasing shift towards emphasis on organized marketing of farm products.

Table 3-1

DEVELOPMENT OF VARIOUS COOPERATIVES IN FARMING SECTOR OF CANADA

Year	Particulars
1903	Local single-unit grain cooperatives organized by farmers competing with private line elevator companies in the prairie provinces.
1905	Farmers decided to establish a cooperative commission company to act as sales agency on the central market at Winnipeg. Soon, farmer cooperative line elevator companies modelled after those of private trade.
1906	Grain Growers Grain Company in Manitoba.
1911	Saskatchewan Cooperative Elevator Company.
1913	Alberta's Farmers Cooperative Elevator.
1914	United Farmers' Cooperative Company was formed in Ontario (Now it is called United Cooperative of Ontario).
1917	Company grain marketing companies of Manitoba and Alberta amalgamated to form the United Grain Growers.
	In Ontario, several farmers' clubs were sponsored by Ontario Department of Agriculture 1900-1910.
1918	Maritime Cooperatives Limited with headquarters at Moncton.
1922	Local cooperatives federated to form La Cooperative Federee de Quebec.
1924	Three provincial wheat pools (Manitoba, Saskatchewan and Alberta) united to form a single selling agency known as the Canadian Cooperative Wheat Producers Limited.
1929	The severe depression gave rise to difficult problems for many marketing cooperatives. Despite all setbacks during the depression farmers continued to give their support to cooperatives.
1935	Consumers Cooperative Refineries Ltd. was established; it was the first cooperative oil refinery in the world with its relevance to the servicing sector of agriculture.
1930-1940	Special legislations that facilitated the development of crédit unions in a number of provinces.
1960	The Canada Department of Agriculture received reports on 2,881 cooperatives excluding credit unions. Their membership was 1,608,208 and $1.4 billion worth of business.
1966	There were 2,538 cooperatives excluding credit unions with a total membership of 1,625,300 and the total volume of business increased to $1,96 billion.
1968	The number of cooperatives declined to 2,469, with an increased membership of 1,723,000 and a total volume of business of $2.3 billion.

Source: W.M. Drummond and W. MacKenzie, *Progress and Prospects of Canadian Agriculture*. Royal Commission on Canada's Economic Prospects, Ottawa, January 1957 and Canada Department of Agriculture. *Cooperation in Canada*. Ottawa, 1960-68 (Extracted Information).

of some of the main cooperatives in the farming sector of Canada during the period 1903 to 1968.

In the 1870's farmers organized and operated cheese factories and creameries in Ontario on the basic principles of cooperation. It was in the period from 1890-1925 that many cooperatives were incorporated under the general company laws of various provinces.[1] During this period and thereafter, farmers learned a great deal from actual experience with voluntary cooperation. Most of the early activities were local in nature, as farmers acquired some knowledge of the problems involved in marketing their products and in purchasing farm requirements, interest in the extension of activities became apparent. This development was most pronounced in Western Canada where about the turn of the century agitation for the establishment of more complete marketing services to take the place of local cooperative elevators got underway. The organization of the Grain Growers' Grain Company in 1906, followed by the Saskatchewan Cooperative Elevator Company Limited in 1910 and Alberta Farmers' Cooperative

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[1] Gradually, special cooperative legislation was introduced in various provinces--Nova Scotia, 1908; Quebec, 1909; British Columbia, 1911; and Saskatchewan, 1913. W. M. Drummond and W. MacKenzie, *Progress and Prospects of Canadian Agriculture,* Royal Commission on Canada's Economic Prospects (Ottawa: 1967), pp. 288-290.

Elevator Company in 1913, exemplify the development of this period. They represent what may be referred to as a period of organization along provincial lines. In addition, the United Farmers' Cooperative Company, Limited, 1914, of Ontario and the Cooperative Federee de Quebec, 1922, were other organizations established on a provincial basis. During this period two other such agencies, the United Fruit Companies of Nova Scotia, 1912, and the Okanagan United Growers of British Columbia, 1913, were created to cover sections of these provinces where fruit production had become a specialized industry.[1]

In the field of interprovincial organization, United Grain Growers, Limited was formed as a result of the amalgamation of the Grain Growers' Grain Company and the Alberta Farmers' Cooperative Elevator Company in 1917. Subsequently, in 1924, the Canadian Cooperative Wheat Producers, Limited, joined with its affiliated provincial units to form a unit known as the Wheat Pool. These are well known examples of interprovincial mergers.

Not content with confining their activities to single interprovincial endeavours, producer organizations eventually extended their efforts to include organizations on a Dominion-wide basis. In 1918, the Canadian Cooperative Wool Growers Limited was formed with branches in all provinces and in succeeding years the livestock and poultry pools acquired national status. In the case of the latter organizations, centralization proved difficult to maintain and a reversion to a provincial basis of operation was found necessary. The Wool Growers' Association, however, is beginning its third decade of operation on a national basis. Thus, in a period of a little more than half a century, a movement represented at first by small, unincorporated, and often loosely organized associations passed through the various stages of provincial and interprovincial development and emerged with a national status.

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[1] J. F. Booth, "Agricultural Cooperation in Canada," *Agricultural Cooperation in Canada,* Edited by W. M. Drummond, (Ottawa: Canadian Society of Technical Agriculturalists, December, 1938).

Economic Rationale for the Fluctuation of Cooperatives in the Canadian Agricultural Sector

The case for cooperative arrangements was based on the assumption that each commodity or service would be produced or performed by a large number of separate and fairly small-scale operators and that the bargaining power between them would be substantially equal. Apparently this was a justifiable assumption from about 1780 to about 1850 or 1860. Gradually, however, the steady drive for increased efficiency as a means to additional profits led to changes in the physical and financial organization, with the result that the assumption became less and less valid. The nature of the changes varied greatly in different economic groups, depending largely on the type of activity undertaken. Generally speaking, the manufacturing and commercial service industries found that the secret of added efficiency lay in intensive specialization, mechanization, standardization and operation on a large-scale basis. Large-scale operation meant that the total requirements for any particular product or service could be met by a small number of concerns. The number needed became less as the scale of operations increased. In contrast, there were other types of activities, of which agricultural production was the most important, in which increasing efficiency was accompanied by the retention of large numbers of relatively small-scale operators.

From the farmer's standpoint these differences in the nature of economic development had two important results. In the first place, the growing divergence between the scale of operation of farmers and those who bought their products caused a steady and pronounced decline in the farmer's bargaining power. In the second place, the replacement of many small marketing concerns by one or two or a very few large ones made it less certain that there would be active competition between marketing agencies or that savings obtained through increased marketing efficiency would be passed on to farmers in the form of higher prices.

The problem presented by this state of affairs was how to arrange things so that selling prices equivalent to those resulting from the active competition between large numbers of separate operators would be obtained. Cooperative marketing had represented an attempt to deal with this problem on the part of farmers, fishermen and others who felt themselves victimized by the prices they had to accept. In practice, the actual form of cooperation had varied with the special nature of the circumstances or the special objective of the cooperators. Where the aim had been to get better prices by increasing bargaining power, voluntary cooperative organizations had been formed to get the benefits of collective bargaining when negotiating prices and other conditions of sale. This type of cooperation was well exemplified by the whole milk producer associations which arranged annual or semi-annual gentlemen's agreements with representatives of the milk distributors. However, it was felt that insufficient competition among the buyers was keeping selling prices too low, cooperation had taken the form of direct participation in marketing. Marketing cooperatives were used to supply the competition which was assumed to be lacking. In all such cases the cooperatives were intended to provide competition and act as peacemakers for the private buying firms.

While a great deal of cooperative marketing had been undertaken in order to compel more competitive and therefore higher price bidding, it was also true that many cooperatives had been organized because it was felt that the existing marketing margins were unnecessarily wide because of sheer inefficiency and that cooperative action, by reducing marketing costs, would make it possible for producers to receive a larger share of the consumer's dollar. In some cases competition had to be almost eliminated in order to achieve real marketing efficiency. It was generally realized that, in order to perform agricultural marketing functions, such as assembling, packing, grading, storing, transporting, advertising, etc., at all efficiently, operation on a specialized and large-scale basis was necessary. In many farming districts, however, operation on such a basis was not possible because there was not enough product to provide each of several competitors with enough volume of business. In many cases the only way to secure the desired volume was to have all or a large number of the farmers arrange to perform the function cooperatively.

There were still other cases where the trouble was not so much a lack of volume of business as simply the fact that the activity concerned was naturally unsuited for competition. There could be little doubt, for example, that the business of transporting milk from the farms to large market centres could be done much more efficiently where milk producers' organizations undertook the transportation of their members' milk on a cooperative basis. This tended to reduce the cost of transportation by reducing the number of trucks and truckers, increasing the average size of load, shortening the distance travelled by each truck, and cutting down the time required to complete a trip. Similar conclusions were valid for other farm products.

Some Early Achievements of Cooperatives in Canadian Agriculture[1]

While the great majority of cooperatives were still relatively small and local in character, many of them federated to form regional or provincial associations in order to obtain the benefits which resulted from operating on a large scale. Also, in a few important instances the desire to get additional economies of scale or additional ability to bargain or influence price resulted in interprovincial or even national organization.

The provincial grain marketing cooperatives of Manitoba and Alberta amalgamated to form the United Grain Growers in 1917, while the three provincial wheat pools united to form a single selling agency known as the Canadian Cooperative Wheat Producers, Limited in 1924. Maritime Cooperatives Limited, with headquarters at Moncton, was a further and more recent example of interprovincial cooperation. It acted as a wholesale cooperative for the entire Maritime area. Organization on a national basis was achieved in 1918 when the Canadian Cooperative Wool

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[1] W. M. Drummond, *Agricultural Cooperation in Canada* (Ottawa: Canadian Society of Technical Agriculturalists, 1938).

Growers was formed, with branches in all provinces. Prior to that time producers knew almost nothing about the true market value of their annual wool clip. Through cooperative efforts Canadian wool was better graded, standardized, and properly placed on all the markets of the world. For some years after the cooperatives began operating, the spread between the price paid by the cooperatives and that paid by the private dealers was very wide. Gradually, however, the competition provided by the cooperatives forced the private buyers to raise their buying prices to the level of those paid by the cooperatives. The private dealers were only able to stay in business and pay these higher prices by reducing their costs and taking a smaller margin of profit.

In Ontario, the Provincial Department of Agriculture had actively sponsored the formation of farmers" clubs during the first decade of this century. These clubs, which numbered several hundred by 1913, were more concerned with improving farm production methods than with improving the marketing situation. Partly because they were subject to government sponsorship and regulation, and partly because it was felt that each club acting alone was powerless to deal effectively with marketing and general economic problems, the United Farmers' Cooperative Company was formed in 1914. Its purposes were to provide a means whereby the clubs could associate not only with one another but with all other local cooperative associations in the province in undertaking marketing and other economic activities. This company, later known as the United Cooperatives of Ontario, steadily expanded its scale of operations and performed cooperative wholesale functions for about 150 local affiliates by 1959, owned by 60,000 Ontario farmers.

A similar development occurred in Quebec in 1922 when the local cooperatives federated to form La Cooperative Federee de Quebec. This organization grew continuously and rapidly and became the central or provincial wholesaler of 375 local cooperatives, serving 50,000 Quebec farmers. It represented 75 percent of all agricultural cooperatives and over 40 percent of all the province's farmers. By 1959 its marketing facilities included three abattoirs, two stations for receiving slaughtered animals, a central livestock selling agency, two poultry processing plants, three egg receiving and grading centres, a grain elevator, and plant for manufacturing butter and cheese boxes and cold storage and warehouse facilities.

Total investment in the three abattoirs was $6,000,000 in 1959. The volume of livestock handled increased rapidly from 88,000 head in 1954 to 61,000 head in 1959, hogs making up over half the total. The three packing plants, the livestock sales agency, and the poultry processing plant were all supervised by Federee's livestock division which employed twelve full-time animal and poultry husbandry specialists. These men helped farmer members with production, transportation, feeding and financial problems.

Prices were published by the meat division on all grades and weights of cattle, calves, sheep and lambs each Friday for a week in advance, while hog prices were established on Monday. While most of Federee's meat and poultry products went to Quebec and Montreal, a considerable part went to small towns as far east as Gaspé and as far west as Toronto. A great deal of veal, as well as some cured pork, was shipped to the United States, while many cured products went to the British West Indies and Central America.

The Federee, together with the total cooperatives, handled from 20 to 25 percent of the province's poultry and eggs by 1959. Its processing plant developed a capacity of 2,500 to 3,000 birds an hour and its hatchery had a capacity of 40,000 chicks. Much of the poultry was marketed through Federee's meat processing plants under the Legrade brand. The total volume of processed poultry handled increased 140 percent from 1955 to 1959, while the combined volume of eggs doubled between 1954 and 1959.

Until the meat processing facilities were expanded in 1955, the marketing of dairy products was the largest activity. In 1960 Federee and its local affiliates marketed 30 percent of Quebec's dairy production. A great deal was marketed directly by some 203 locals which operated cooperative dairies, while Federee, the central wholesale, handled the balance. One of Canada's largest dairy processors, the Granby Cooperative, was affiliated with Federee. The Granby Cooperative had 3,200 members and its sales in 1959 were about 20.0 million dollars. While Cooperative Federee had a large farm supply business, nearly two thirds of its total business volume was represented by its marketing activities.

Initiation of Marketing Boards in Canada

In their attempts to secure better prices and increased marketing efficiency through cooperative action, Canadian farmers found that there were limits to what could be accomplished by the organization and operation of cooperatives in the case of some farm products. It became more and more apparent that the very fact that membership in a cooperative was voluntary made it impossible to spread the burdens and benefits evenly among all producers of certain commodities and to exercise the degree of control which must be exercised if specific marketing activities and objectives were to be undertaken and achieved. Experience led farmers to conclude that what they needed was legislation which would permit 100 percent control of the product.

This conclusion seems valid as two attributes of cooperative bargaining institutions have been alleged as decisive in determining their economic consequences in various environmental settings. One has been their inability or lack of authority to control production; the other has been the weak pecuniary incentive from the point of view of a single grower to join or remain in a bargaining association. If cooperatives had market power, it was reasoned that it was because they had control over the disposition of production rather than over the quantity produced. The crucial production or output variable was determined by the decision of many relatively small growers acting more or less independently of one another.

In an economic system characterizing entrepreneurship, individualism and magnitude of performance, it would seem difficult to expect voluntary surrendering of profit-maximization incentives under favourable conditions obtained in the market. The practice of these cooperatives operating within an oligopolistic or a monopolistic framework demanded for either proprietary powers or a very effective organizational force. As Professor Galbraith emphasized "in practice, a cooperative cannot fully control even its members. They are under the constant temptation to break away and sell their full production. Then they do it is in effect, at the expense of those who stand by the cooperatives . . . . In marketing cooperatives, the non-cooperator or recusant gets a premium for his nonconformance."[1]

Farmers unhappy with the performance of cooperatives seemed to become more convinced of the importance of being able to manage total supply more rigidly than was possible with cooperatives in order to increase the prices for farm products and consequently their incomes. This feeling became more intense, and instead of correcting some of the causal factors, farmers and other similarly interested groups started to demand more rigidly controlled institutions in order to regulate the marketing of farm products in a systematic and organized manner. This led to the creation of producer controlled marketing boards with compulsory powers to control marketings of producers of an individual farm commodity.

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[1] John K. Galbraith, *American Capitalism: The Concept of Countervailing Power* (Cambridge: The Riverside Press, 1966), p. 161.

The first marketing board was initiated in British Columbia during 1927. Since then, there has been a substantial rise in the number of marketing boards. The development of marketing boards has been under the legal authority of both federal and provincial legislation. Their history dates back to the years of the great depression.

With the deepening of the Great Economic Depression in the 1930's, pressure was exerted on the Federal Government to enact legislation that would provide for a more orderly marketing of Canadian farm products. Despite considerable opposition, the Natural Products Marketing (Canada) Act was passed in July, 1934 and led to the institution of the Dominion Marketing Board with the following jurisdiction of powers: 1. to regulate and control the marketing of farm products, 2. to delegate these powers to local boards organized by producers in an area, as long as good proportion of the product was marketed either interprovincially, or internationally within the explicit authority of the Dominion Marketing Board. Provision existed for intraprovincial marketing to be controlled under provincial authority; and 3. delegated powers to regulate imports that competed with regulated products, but not the movement to other areas in Canada. Where attempts at organization of local boards were confronted with particularly different problems, the Dominion Board was empowered to regulate directly the marketing of the particular product for which attempts were being made to organize a local board. In such cases, intervention by the Dominion Board would have rendered unnecessary the establishment of a local board.

In addition, the Dominion Board was empowered to regulate and/or restrict imports that competed with regulated domestic products. It would have been unlikely, therefore, that a local market, once stabilized, could have been upset by the inflow of farm products from alternative sources of supply outside a province. This regulation, however, did not pertain to interprovincial trade. In the event of any disruption in trade from this course, the matter was simply referred to the Dominion Marketing Board.

In order that the quantity, quality, time and place of marketing, as well as the establishment of pools for the equalization of returns, could be regulated, it was necessary that all producers of a particular commodity register and obtain a license to market their products. Provision was also made in the legislation for a revocation of all licences for contraventions of the Board's regulations. Moreover, it provided for investigation of market conditions, performance and conduct, and it also empowered the Board to prosecute for attempts to obtain excessive margins,[1] as well as for other market practices that were considered injurious to healthy trade.[2]

By September, 1935, twenty-two marketing schemes were recommended to the Governor-in-Council. These schemes were mainly for particular farm products in British Columbia, Ontario and Nova Scotia.[1] While the boards that were set up to administer these schemes were experimenting with their new powers under the Act of 1934, the Supreme Court of Canada was examining its legality. In November, 1935 the Dominion Government referred the Act to the Supreme Court of Canada and accepted no further applications for the establishment of marketing schemes.

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[1] In 1931 there began a series of decisions relating to provincial marketing legislation holding that certain charges incidental to marketing schemes were taxes and so needed the test of direct taxation. The fact that a marketing scheme was otherwise justifiable under a regulatory power could not give validity to charges characterized as indirect taxation. Several constitutional implications were involved and reference to some of the series like Lawson vs. Interior Fruit and Vegetable Committee before the Supreme Court of Canada, Lower Mainland Dairy Products Sales Adjustment Committee vs. Crystal Dairy Ltd., etc. is relevant. Bora Laskin, "Provincial Marketing Levies: Indirect Taxation and Federal Power," *University of Toronto Law Journal*, Vol. 13 (1959-60).

[2] A marketing board was viewed, therefore, as a means of eliminating competition among the producers of a particular commodity in a given area. It was empowered by legislation to restrict output whenever it was considered that over-supply threatened stability of the market. At the same time, it facilitated a diversion of surplus products to lower priced alternative markets without unduly depressing prices on the domestic market. The stabilized market could then be protected from foreign competition through import restrictions.

The Supreme Court of Canada later opinioned that the Agricultural Products Marketing (Canada) Act was *ultra vires*--i.e., regulation vested in the Dominion Board involved not only interprovincial and international trade, but also trade which was "entirely local and of purely local concern." In addition, the Court ruled that:

> Regulation of individual trade, or trades in individual commodities in this sweeping fashion is not competent to the Parliament of Canada and as such, a scheme of regulation is not practicable in view of distribution of legislative powers enacted by the Constitution Act without the cooperation of the provincial legislation . . . .

This opinion was later referred to the Judicial Committee of the Privy Council, whose judgement on this matter upheld the decision of the Supreme Court. In view of this decision, the Act of 1934 was repealed in January, 1937.

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[1] L. E. Poetschke and W. MacKenzie, *The Development of Producer Marketing Boards in Canadian Agriculture* (Edmonton, Alberta: Department of Extension, University of Alberta, 1960), p. 10.

In anticipation of the ruling of the Supreme Court, British Columbia passed its own Natural Products Marketing (British Columbia) Act, and made it valid the day after the decision of the Supreme Court was handed down in June, 1936. The Act was identical in substance to the Federal Act. Ontario and New Brunswick were quick to follow with similar acts in 1937. In 1938 the Chamber of Agriculture recommended that each province pass an act of its own and that the Dominion Government pass enabling legislation that would allow for the control of interprovincial and international trade.

By 1940 all provinces except Quebec had enacted some form of legislation for the marketing of farm products. In that year, the Canadian Federation of Agriculture again approached the Federal Government on the question of federal marketing legislation. In fact, the Federation drafted and presented a short bill for the Government's approval. By this time, however, war had broken out in Western Europe, and the invocation of the War Measures Act gave the Federal Government rights of regulation and control that were even greater in scope than those envisaged in any proposed marketing legislation.

At the conclusion of the War in 1945, the Canadian Federation of Agriculture was invited to participate with Government representatives in the drafting of a short bill for submission to Parliament. Out of these deliberations emerged the Agricultural Products Marketing (Canada) Act of 1949 which was quite similar in nature and scope to the bill presented by the Federation of Agriculture in 1940.

Agricultural Products Marketing (Canada) Act of 1949

This Act gave the Federal Government authority to delegate to provincial boards powers to control and regulate interprovincial and international trade of locally produced farm products. Thus, a provincial board could regulate the outflow of its own product to markets outside the local market, but it remained powerless to regulate the inflow of farm products from alternative sources of supply outside the province.

Another development in the field of federal legislation began in 1957 when it was ruled that a levy raised for tax price stabilization for pooling purposes constituted an indirect tax. As such, this was beyond the authority of a provincial government. The Agricultural Products Marketing (Canada) Act was, therefore, amended to allow for a delegation of authority in order to raise levies on a provincial basis.

Two other aspects to the development of marketing legislation for farm commodities should also be reviewed. These refer to the institutions of federal and provincial authority over special types of marketing institutions with exclusive control over the interprovincial and international trade in wheat and coarse grains except corn, as well as some control over particular types of dairy products. The federal marketing institutions were the Canadian Wheat Board, established in 1935, and the Canadian Dairy Commission, set up in 1966. The provincial marketing institutions which derived their powers exclusively from the provincial governments were the milk marketing boards of the various provinces.

During the depression of the 1930's, the grain economy of Western Canada was confronted with difficult economic problems. Relatively low farm prices and income as well as crop failures resulted in widespread mortgage foreclosure, farm abandonment, and general economic distress throughout the Prairies. Under the Canadian Wheat Board Act of 1935, the Canadian Wheat Board was established to deal with the problems of the prairie wheat economy.

An important goal of the Canadian Wheat Board has been to rationalize the flow of grain from Western provinces to markets. In order to achieve this goal, the Board instituted a quota system designed to regulate the flow of grain to the commercial elevator system and to maintain equity in the opportunity for delivery between grain producers.

Establishment of Provincial and Local Producer Marketing Boards

Provincial marketing boards and/or councils were appointed by the Lieutenant-Governors-in-Council of the provinces to administer in varying degrees the marketing legislation of their province. Under the terms of the various Provincial Marketing Acts,[1] the Lieutenant-Governor-in-Council of each province was empowered to appoint a provincial board. There were also considerable variations in the regulations and powers of supervision that had been vested in provincial marketing boards.

In the case of Prince Edward Island, New Brunswick, Saskatchewan and British Columbia, local producer marketing boards derived their powers directly from the Lieutenant-Governor-in-Council and many acted almost as autonomous units. In the other six provinces, the Provincial Marketing Boards or Councils supervised the operations of local producer boards more closely than was the case with the four provinces referred to earlier. Among all the provinces, however, there has been considerable variation in the methods of establishing local producer marketing boards and the selection of members to them. In some provinces such as Prince Edward Island, Quebec, Ontario, Saskatchewan and Alberta, a marketing plan for a particular farm commodity could not be established on a permanent basis without a vote having first been taken by producers who might be affected and would, therefore, be required to participate in the marketing plan.

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[1] Appendix B gives the names, dates and descriptions of the provincial marketing legislations under which the marketing boards were established in each province.

In Alberta a minimum number of producers have to register in order to be entitled to vote on a plan, and they must represent a specified quantity of the product marketed. These figures are varied, depending upon the product, the total number of producers, and the powers requested. If an insufficient number of producers registered or if they represented an insufficient portion of the product marketed, there was no vote on the plan. However, if the minimum registration requirements were met, than a simple majority of those producers having registered voting in favour of the plan would put it into operation.

In the case of Prince Edward Island, a plan has to be approved by at least 60 percent of the producers voting in the area where the plan is to be applied. In British Columbia, however, marketing schemes were approved by the Lieutenant-Governor-in-Council. A scheme might be submitted to a plebiscite, but this was generally not required. In Manitoba, although it was not mandatory, a plan has to be submitted to the vote of those producers whose income from the sale of the product to be regulated exceeds $500 annually.

In the case of Newfoundland, Nova Scotia and New

Brunswick, although it is not necessary to hold a plebiscite, no marketing scheme can be established unless the Provincial Marketing Board is satisfied that the scheme was approved by a satisfactory proportion of producers. In Nova Scotia and Newfoundland, all the producers or marketers were required to approve the marketing plan, whereas in New Brunswick all those engaged in the marketing of the produce have to do so.

In general, members of local producer marketing boards were appointed or elected on the basis of the provisions of the particular marketing schemes. In most provinces, the schemes or plans had to be approved by producers. It might be concluded, therefore, that marketing boards are virtually controlled by its producer members. For example, in Manitoba, where a plebiscite is not required, the Act stipulated that members of a producer board must be elected by, and from, the producers of the regulated commodity who sell through the producer board.

In Quebec, a marketing plan can designate, instead of a producer board, a professional syndicate composed exclusively of producers of farm products, or a cooperative farm product association that has as its sole objective, the marketing of farm products to perform the same function as would a producer controlled board. The operations of such a syndicate are subject to the approval of an annual meeting of its producers.

Appointment of Marketing Commission and Producers Associations Under Provincial Acts

The Manitoba Act also provided for the establishment of marketing commissions as distinct from producer marketing boards. This Act empowered the Lieutenant-Governor-in Council to set up industry commissions comprising farm operators, processors, and other members of the agribusiness group and even consumers. This represented a total industry approach to the problems of price and income stability confronting the particular sector of the agricultural industry in that province.

The legal status, extra-provincial relations, and the powers vested in a marketing commission were identical to those of producer marketing boards. The main distinction lay in the fact that, whereas the members of the latter were elected by and from the producers of the regulated commodity, the members of the marketing commission, representing various groups that had an interest in the commodity, were appointed by the Lieutenant Governor-in-Council. A marketing commission could, therefore, be establishd with the power to regulate marketing and to set producer quotas. Its members could represent wholesaler, processors and producers, as well as other interest groups.

The Alberta Marketing Act also provided for the establishment of marketing commissions to be appointed by the Lieutenant-Governor-in-Council. Commissions so appointed, however, could not act as regulatory bodies or fix production quotas. They could determine the time and the place at which, and agencies through which, the regulated commodity was marketed by producers on a purely voluntary basis. The commission could, however, with the approval of the Alberta Agricultural Products Marketing Council prohibit anyone from marketing or processing an agricultural product except under the authority of a license granted by it.[1]

The Ontario Marketing Act provided, in addition, for the establishment of producers' marketing boards, and for designation of Producers' Associations. In the case of non-regulated products, a group of producers could request that an Association of Producers incorporated in the Agricultural Associations Act, or the Cooperatives Act, could be designated as the representative association for all producers of a particular commodity in the province. If the Ontario Marketing Boards were not satisfied that a majority of producers were in favour of this request, the Lieutenant Governor-in-Council could designate the incorporated association as the representative of all producers within the Province.

In general, every producer of the regulated product could be deemed to hold a licence for marketing the farm commodity.[1]

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[1] In Alberta, producer boards were granted the power of setting prices for producers and/or to issue marketing quotas as a requirement of the Council that there be an Industry Advisory Committee appointed by the Council to guide the board on these matters. Such committee consisted of all segments of the industry involved (e.g., broiler processors, feed dealers, hatcherymen, consumers and producers also from the grower association).

Establishment of Local Boards Under the Provincial Marketing Act

Roles assigned to the local producer boards differed in methods and approach according to the provisions contained in the various Provincial Marketing Acts. Local boards have been empowered to purchase the commodities from producers in some provinces.

Price Setting by the Local Marketing Boards

Two provinces explicitly limited the powers of a local producer marketing board to setting prices for producers only. In Manitoba a local marketing board could fix the maximum or minimum price or both at which the regulated product under its jurisdiction could be sold by a producer. In Nova Scotia a local board could set the fair or minimum price paid to a producer for his product.

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[1] Each provincial act (Appendix B) provides the delegation of authority to local boards for the licensing, revoking and cancelling of licences as well as the prohibiting of marketing of a regulated commodity without a license. It provides for the licensing of marketers, whereas in some provinces there is provision for the licensing of both producers and marketers. Licensing is for the purpose of registration and for taking legal action if the person registered fails to remit his fee or provide certain information as specified in the rules of registration. It is only through the licensing technique that legal action may be taken. Constitutionally, the marketing boards derive their powers to levy fees and issue licences from section 92 (9) (the licensing power), section 93 (13) (property and civil rights) and (2 (16) (local and private matters) of the British North America Act (1867). The regulatory aspects of licensing might be justified under the two latter heads, and the revenue features under section 92 (9). In cases of several judicial disputes, the license fees have been justified as fees for services under sections 92 (13) and 92(16). Legal controversies exist in the framework of these sections and many court decisions are available in which the powers of marketing boards have been ruled out under these sections of the British North America Act.

In the case of the four provinces of British Columbia, New Brunswick, Newfoundland and Prince Edward Island, the legislation permitted local boards to set prices at other levels in addition to those that were to be paid to the producer for his commodity. In British Columbia and New Brunswick the local board might fix a price or prices as "maximum and minimum" at which a regulated product was sold. In the case of Newfoundland, the local marketing board adopted, determined or accepted fair "maximum or minimum" prices at which the regulated product could be sold for any class, grade or variety, either at the wholesale or retail level or both. In Prince Edward Island the legislation permitted the local board to determine the maximum spread that dealers and/or any designated agency could add to the price paid by them for the regulated product of any variety, grade, class or size.

In the Ontario and Alberta Acts, the local boards, as principal or agent, may control the marketing of a particular regulated product. Similarly, the Saskatchewan Act provides that boards may buy the regulated product as principal or agent, whereas in Nova Scotia, the Provincial Act prohibits any person other than the board from marketing the regulated product. In other provinces, even though the local board may set the producer price and determine to whom the producer sells his product, it does not assume title to the product at any time

Distribution of Proceeds from Sales of Farm Products

The Provinces of British Columbia, Alberta, Manitoba, Ontario, Quebec and Prince Edward Island provided for the authorization of pools for the distribution of the proceeds received from the sales of the regulated product. Each received a share of the total in relation to the amount, variety, size, grade and class of the regulated commodity that was delivered by him.

Fixing of Quotas--A Technique of Supply Management

A "quota privilege" a constituent part of supply management, could be granted by an organization--a marketing board--through its legal powers and practical capability to put restrictions on the quantities delivered to the market in question. Quota was quantitatively defined in a way as to fix an upper limit on the quantities of a product that a producer could supply to the market. This was termed as an aggregate market allowance. Technically, it entitled the producers to a certain proportion of the total quantity supplied to the restricted market. Quota privileges were either transferable (transfer of quota privileges from their present holder to another person) or non-transferable (quota privileges could not be transferred from their present holder to another person). Fixation of an aggregate market allowance was interpreted as a technique of price fixing by fiat. Allowing for an aggregate market allowance, the board fixed a price and the quota privileges were then determined as fractions of the total aggregate market allowance. Beside fixing an aggregate market allowance, boards could also place restrictions on the production of a farm product, and these "quotas" took the form of "production quotas."

Each Provincial Act stipulated that a local producer board might set quotas in one form or another.[1] In the case of Prince Edward Island, the Act provided that a local board could control marketing. It stipulated, however, that a board could not control production of a commodity. It contended that the latter was *ultra vires* of the British North America Act. In British Columbia, Alberta and Ontario, the Acts stipulated that local boards could provide for marketing on a quota basis and that they might allot quotas to producers, refuse to allot quotas, reduce a quota allocation and even refuse to increase a quota. The Ontario and Quebec Acts provided for quotas on production, as well as on marketing.

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[1] Several marketing boards in Canada adopted either one or two practical methods of regulating the supplies of particular farm commodities. The first involved the allocation of either production or marketing quotas which were of two types: (i) a fixed basic quota allocated to each regular producer and based on the magnitude of the physical production facilities on his farm unit at the time that inventories of facilities were taken, and (ii) an annual crop quota determined by reference to the basic quota. The second practical method of controlling supply involved a restriction on entry of new producers into particular sectors of the agricultural industry.

Bill C-176--Initiation of The National Farm Products Marketing Council

During the 1960's severe marketing and price problems were experienced in the farming sector and led to the rapid growth of marketing boards within several provinces. The internal development within the Canadian agricultural and food system and the increasingly difficult world agricultural situation created the need for clarification of several constitutional issues. Producers and provincial governments came to recognize the serious limitations of the provincial approach so far used in the marketing board technique. Pressures for federal legislation to provide for national marketing structures began to develop. A specific proposal for such legislation was prepared by the Canadian Federation of Agriculture in 1963, but even so there was not sufficient support for the whole of agriculture.

The creation of the Canadian Dairy Commission to establish a comprehensive approach to milk production and marketing was the next step. Then the agreement to provide national legislation for egg marketing generated support for other commodities. In 1970, a draft Act was laid be-

before the parliament to provide the national enabling legislation. As the marketing problem in eggs and broilers worsened, the so-called "Chicken and Egg War" between groups of producers and provinces indicated a further need to solve these problems on a national basis.[1]

These were the background reasons that led to the adoption of Bill C-176 by the House of Commons on December 30, 1971, authorizing the establishment of the National Farm Products Marketing Council and subsequently, the National Marketing Agencies for farm products. Bill C-176 was assented on January 12, 1972 and an Act cited as "The Farm Products Marketing Agencies Act" came into operation to establish the National Farm Products Marketing Council. This authorized the stablishment of national marketing agencies for farm products.[2] Appendix C gives the details of the Farm Products Marketing Agency Act.

Summary

The history of organized agricultural marketing in Canada is closely aligned with the history of farm organizations in general. The early emphasis of organizational developments was relevant to farm-management orientation which shifted to market orientation as the farmers felt that their countervailing power vis-a-vis the more concentrated agribusiness was deteriorating. Consequently, Canadian farmers sought increased selling prices through joint action of various kinds; cooperatives were an important part of this action during the latter part of the 19th century. The whole case for cooperative arrangements was based on the assumption that each commodity or service would be produced or performed by a large number of separate and fairly small-scale farmers and that the bargaining power between them would be substantially equal. Though the growth in the number and scope of marketing boards was extensive during the early period, farmers, however, realized that there were limits to what could be accomplished by the organization and operation of cooperatives in Canada. It became more and more apparent that the very fact that membership in a cooperative was voluntary made it impossible to spread the burdens and benefits evenly among all producers of a commodity and to exercise the degree of control which was required to be exercised if certain kinds of marketing activities and objectives were to be undertaken and achieved. It has been recognized that, in practice, a cooperative cannot fully control its members. This concern led to the demand for and ultimately the creation of the enabling marketing legislation for farm products under which the various provincial producers' marketing boards were established. The growth of marketing boards has undergone various legislative developments and in 1949, the Agricultural Products Marketing (Canada) Act became the main legal strength for the provincial governments to pass their respective provincial legislation to establish provincial marketing councils, marketing boards and commissions in order to administer provincial marketing legislation in their jurisdiction.

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[1] Geoffrey Hiscocks, "Theory and Evolution of Agricultural Market Regulations in Canada," *Market Regulation in Canadian Agriculture,* Occasional Series No. 3 (papers presented at the Marketing Board Seminar, January 6 and 7, 1972.

[2] These central marketing agencies could be established for any farm product under the specified procedure. The central egg and turkey marketing agencies have already been established and the central broiler chicken marketing agency is expected to be in existence soon.

During the 1960's the concept of marketing boards was well established in all provinces of Canada. This development led to continuing pressures for federal legislation in order to provide for national marketing structures. Ultimately, by virtue of Bill C-176 assented to by the Federal Parliament on January 12, 1972, the National Farm Products Marketing Act came into effect, establishing the National Farm Products Marketing Council.

CHAPTER IV

THE DIMENSIONS OF MARKETING BOARDS OPERATING IN CANADA

The previous chapter outlined and analyzed the historical development of marketing board use in Canada. Analysis indicated that the adoption of quota policies by marketing boards was initiated by the economic problems of the depression of the 1930's. Since then, the scope of marketing quotas has continuously expanded and their use simultaneously rationalized on the basis of their capacity to maintain stability in the relevant sectors of Canadian agriculture.

In view of this expansion, the importance of the increasing scope and dimension of marketing boards is examined before attempting an economic evaluation of the quota policies of a selected marketing board in Chapter VI.

Growth in the Number of Marketing Boards

The first marketing Board in Canada was established in 1927 in British Columbia.[1] With a brief lapse, the number of marketing boards has continuously increased since then. The fastest growth in their number was experienced during the 1955-69 period. There were only 32 marketing boards in 1956, increasing to 76 by 1960, 90 by 1964. and 102 by 1965. In 1969 there were 122 marketing boards. During 1970 several regional milk boards in Quebec were consolidated, resulting in a decline in the total number of marketing boards from 122 in 1969 to 94 in 1970. In 1971 the number of marketing boards further declined to 93. Table 4-1 presents a summary of the marketing boards in Canada by province and products for the period 1957-71. Figure 4-1 depicts the increase in the number of marketing boards in Canada for the same period.

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[1] Appendix A.

A province-wide examination for 1969 indicates that 64, or more than 50 percent, of the marketing boards were located in the Province of Quebec. Twenty-two, about 18.0 percent, were in Ontario and 9, or 7.0 percent, in British Columbia. It indicates that 95 out of 122 marketing boards (about 77.0 percent) were located in three provinces, Quebec, Ontario and British Columbia.[1] The proportion for 1970 and 1971 changed substantially because of the consolidation of various milk boards in Quebec. However, Quebec, Ontario and British Columbia continued to have the largest number.

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[1] This indicates only the proportion of number and not the percentage of sales in dollars, in which case the Canadian Wheat Board covering the Prairie Provinces may have a substantial proportion.

Table 4-1

MARKETING BOARDS IN CANADA AND PRODUCTS UNDER JURISDICTION OF MARKETING BOARDS BY PROVINCE 1956-71, CROSS SECTION AND TIME SERIES ANALYSIS

Province	Years 1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970[1]	1971[2]
British Columbia	3	3	3	3	3	3	4	4	5	5	6	7	9	9	10	10
Alberta	0	0	1	1	1	1	1	1	1	1	4	4	1	-	9	9
Saskatchewan	1	1	1	1	1	1	1	1	1	1	2	3	3	3	5	4
Manitoba	1	1	1	1	1	1	1	1	3	3	3	3	5	5	6	7
Ontario	19	20	18	16	16	17	16	16	17	21	21	22	22	22	27	20
Quebec	0	15	34	36	46	46	50	52	54	62	66	67	64	64	32	25
New Brunswick	4	4	4	4	4	3	3	4	4	4	6	6	6	6	6	7
Nova Scotia	2	2	3	3	3	3	3	3	3	3	4	3	3	3	4	4
Prince Edward Island	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	5
Newfoundland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Canadian Wheat Board	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1
Total	32	48	67	67	--	--	84	84	90	102	114	117	118	122	101	93

Source: Economics Branch, Marketing Boards in Canada, Canada Department of Agriculture, Ottawa, 1956-1971.

1. During 1970, the regional fluid milk boards in Quebec were consolidated under a single provincial plan as had been done with the industrial milk boards in 1969. This is the reason for the substantial decrease in the number of marketing boards.

2. Adjusted to include the Seven Dairy Boards reported for the first time in 1970-71.

Recently, however, eggs and broiler marketing boards are operating in all ten provinces (1973).

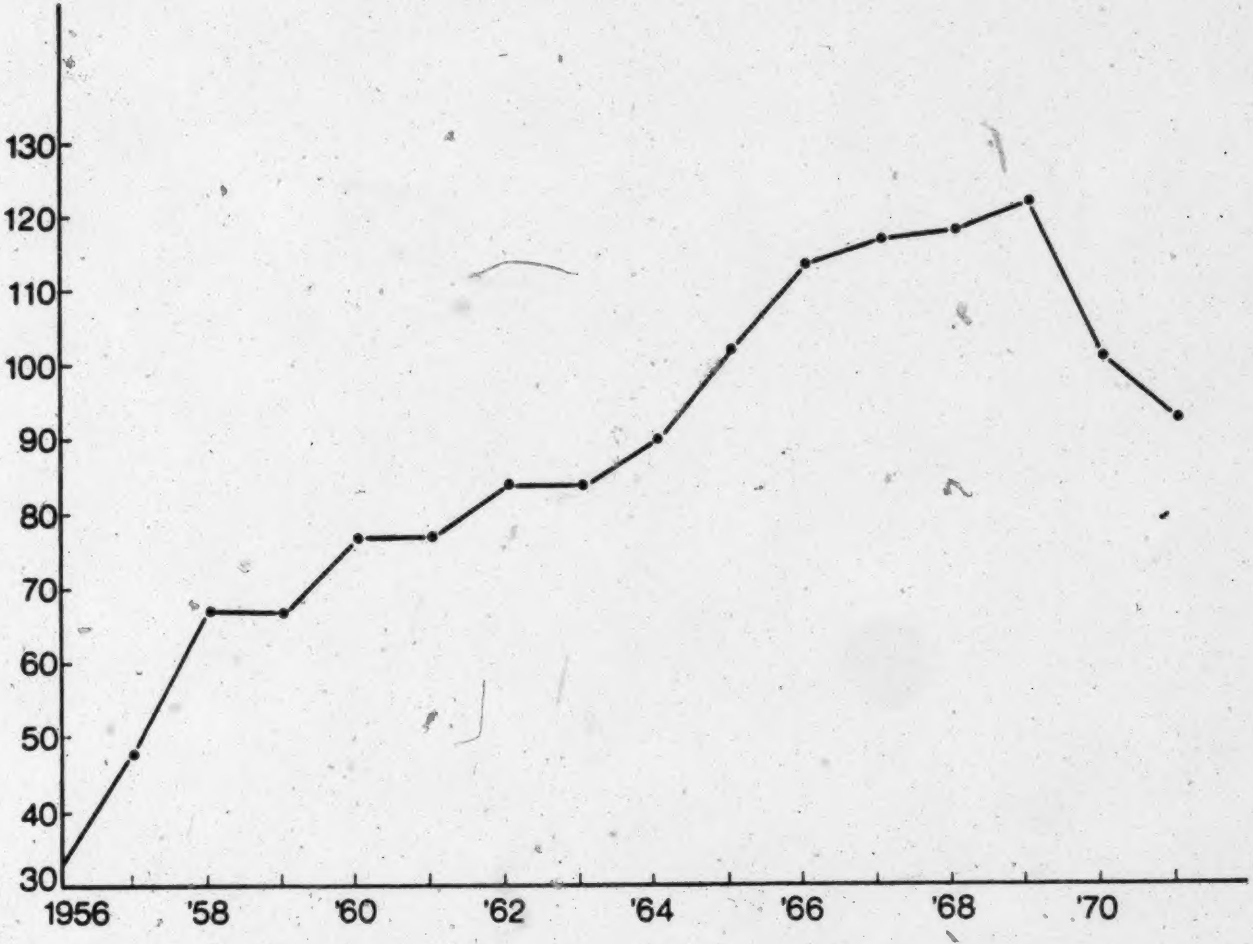

FIGURE 4-1

MARKETING BOARDS IN CANADA 1956 THROUGH 1971

Number of Producers Affected by Marketing Boards

Data in Table 4-2 suggest that an increasing number of farmers marketed their produce through marketing boards during 1957-1971 period. The increasing trend is depicted in Figure 4-2. In 1957, for example, 165,562 farmers marketed their produce through marketing boards. This number increased to 445,844 in 1969 and was 489,488 in 1971. While over 50.0 percent of the marketing boards were located in the Province of Quebec in 1969, only 19.5 percent of the Quebec farmers marketed their produce through marketing boards.

In contrast, less than 20.0 percent of the marketing boards were located in Ontario, but more than 25 percent of the total number of farmers marketed their produce through marketing boards. In the Prairie Provinces, grain farmers constituted the single largest group of farmers who marketed their products through marketing boards (Canadian Wheat Board).[1]

Proportion of Farm Cash Receipts Generated by the Products Regulated Under Marketing Boards

Another way to evaluate the expansion in the operation of marketing boards is to look at the increasing

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[1] This included 189,532 farmers who marketed their wheat through the Canadian Wheat Board and the remaining 256,350 marketed their farm products through various other marketing boards in 1969. In 1971, the number of prairie farmers selling their wheat through the Canadian Wheat Board was 175,641. This made the total number of farmers under marketing boards equal to 489,488 in 1971 as compared to 489,907 a year earlier.

FIGURE 4-2

NUMBER OF PRODUCERS WHOSE PRODUCTS WERE UNDER JURISDICTIONS OF MARKETING BOARDS IN CANADA--1957 THROUGH 1971

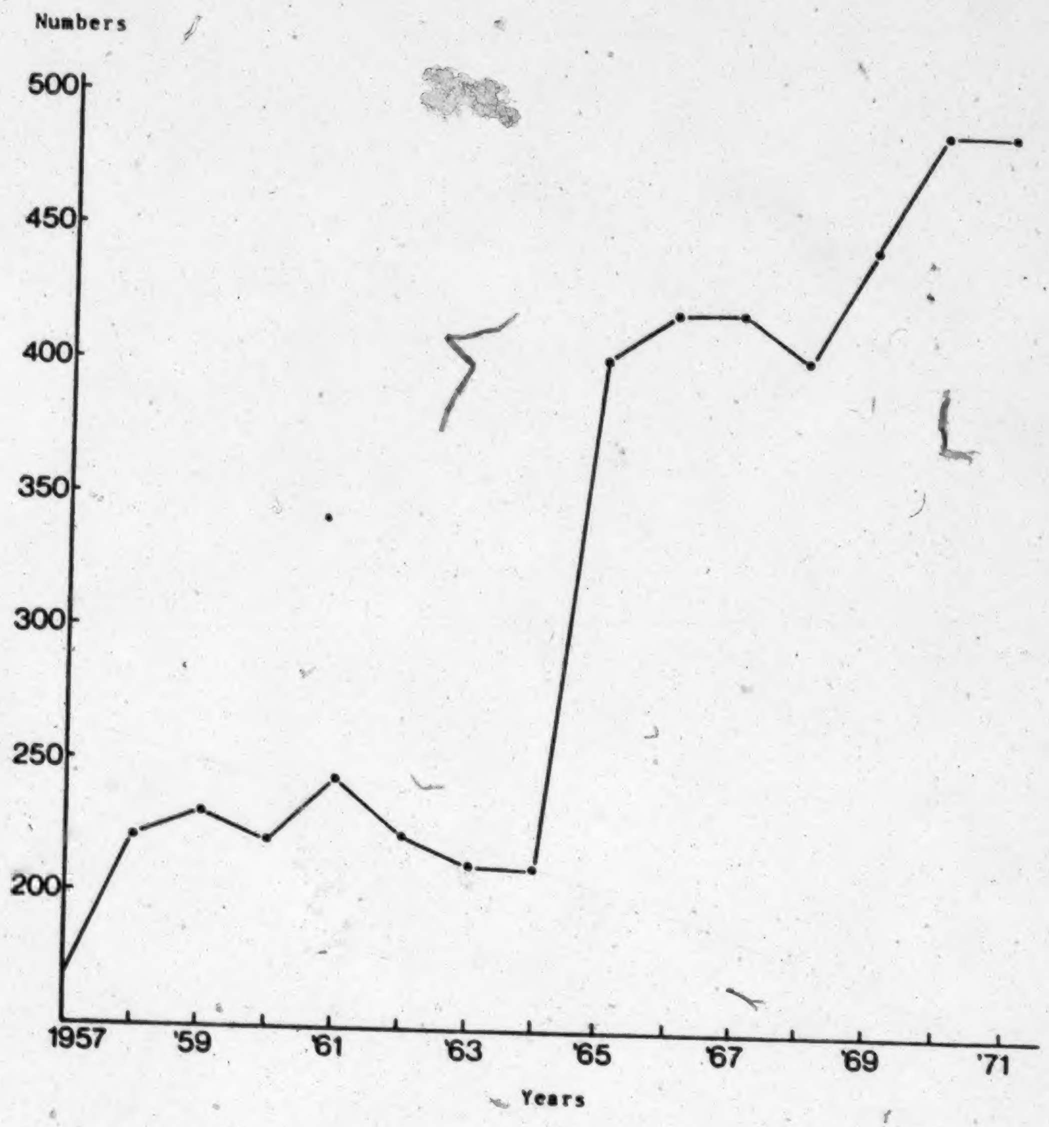

Table 4-2

NUMBER OF PRODUCERS WHOSE PRODUCTS WERE UNDER JURISDICTION OF MARKETING BOARDS IN CANADA, BY PROVINCE, CROSS SECTION AND TIME SERIES ANALYSIS 1957-71

Province	Years 1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
British Columbia	4,570	4,570	4,377	4,435	4,503	4,500	4,526	4,325	4,115	4,221	5,196	4,866	5,028	4,754	6,004
Alberta	0	388	347	348	434	361	378	330	266	942	861	807	28,162	81,573[1]	84,743[2]
Saskatchewan	2,050	2,470	2,500	2,400	2,000	1,800	1,650	1,550	1,400	296	475	372	324	652	955
Manitoba	1,200	1,030	1,080	920	790	730	595	688	11,520	11,500	11,229	9,502	11,340	11,290	10,353
Ontario	147,800	159,379	184,230	165,725	188,565	168,879	103,041	158,974	134,691	138,825	146,221	124,793	113,004	111,155	116,313
Quebec	n.a.	27,400	28,081	32,844	37,021	38,992	32,932	36,920	38,015	50,152	52,118	60,108	87,094	79,692	80,021
New Brunswick	3,445	3,450	3,550	3,215	3,630	1,952	2,838	2,432	2,238	9,214	[illegible]	6,442	5,092	4,980	4,791
Nova Scotia	5,880	5,897	6,722	6,904	6,883	6,672	6,340	6,225	3,320	2,871	2,052	2,024	1,806	1,804	2,297
Prince Edward Island	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5,400	4,500	4,500	4,500	4,500	4,500	8,300
Newfoundland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	70
Canadian Wheat Board	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	214,673	210,630	204,552	197,631	199,986	189,532	190,986	187,918	175,641
TOTAL	165,562	222,184	230,687	221,074	244,573	223,886	212,301	211,344	405,195	420,152	421,344	402,940	445,844	489,907	489,488

Source: Economics Branch, Marketing Boards in Canada, Canada Department of Agriculture, Ottawa, 1957-71

1. Revised to include producers under the Alberta Cattle Commission.

2. Included are 4,844 producers under the seven Dairy Boards that were not reported on in provincial statistics in previous years.

proportion of agricultural commodities that have been sold through various producers' marketing boards in Canada. Both cross section and time series data were used to estimate the change in proportion of farm products as regulated by marketing boards during the 1957-1971 period.

Cross Section and Time Series Analysis

1957-1959--Estimated percentages in Table 4-3 suggest a continuously increasing importance of marketing boards in all provinces. Cross section and time series data together indicate that although a third of Canadian farmers were affected by marketing boards in 1957, many of them sold part, but not all, of their produce under the marketing plans established.[1] Sales under such plans accounted for 11.6 and 13.0 percent of cash income from sales of agricultural products in 1957 and 1958, respectively (Table 4-3). The proportional change between 1958 and 1959 was small.

On a province-wide basis, only in Nova Scotia was there a substantial change in the proportion of agricultural produce sold through marketing boards. The increase was from 2.4 percent in 1958 to 7.1 percent in

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[1] As the individual marketing boards in the 1957-58 period directed the marketing of only one agricultural product or of a small group of closely related products, the share of total agricultural produce sold through marketing boards was considerably smaller than the proportion of producers affected.

1959.[1]

In Ontario and British Columbia a substantial proportion of the agricultural produce was marketed through producers' marketing boards in the 1957-59 period. The small gain from 1957 to 1959 in Ontario was accounted for largely by the establishment of the Ontario Wheat Producers' Marketing Board. In most other provinces the marketing boards' share of total sales of farm products changed only slightly (Table 4-3). These changes could be attributed to shifts in the relative income from various agricultural products. In Ontario, for example, there was a substantial increase in the value of hogs and dairy products marketed in 1958-59 as compared with 1957; this increase was associated with a corresponding increase in the value of products marketed by marketing boards in Ontario and the rest of Canada.[2]

1960-1964--In 1960 the value of agricultural marketings under marketing board plans in Canada increased

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[1] The addition of business for the Cape Breton Milk Marketing Board which was established in 1958 led to a sizeable increase in marketing boards' business. No business was reported for the Nova Scotia Cape Breton Milk Marketing Board in 1958.

[2] Ontario accounted for nearly 90 percent of all produce marketed through provincial marketing boards in Canada. The relatively large cash income from farm products in Ontario contributed to this predominance but the main cause of it was that Ontario was the only province in which a large share of the total agricultural output was marketed through marketing boards. L. E. Drayton, *Marketing Boards in Canada, 1959 National Summary* (Ottawa: Economics Branch, Canada Department of Agriculture, February, 1961), p. 6.

Table 4-3

VALUES AND PROPORTION OF AGRICULTURAL COMMODITIES REGULATED BY PRODUCERS' MARKETING BOARDS IN CANADA, VALUE IN $000 AND PROPORTIONS IN PERCENTAGES, CROSS-SECTION AND TIME-SERIES DATA 1958-1971

Years Provinces	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970[1]	1971[2]
					Cash Receipts in '000$										
British Columbia	14,687	12,607	13,380	17,705	15,949	23,544	25,073	25,376	26,094	42,210	56,489	61,262	62,000	71,520	128,135
%	12.9	10.6	10.9	13.3	11.6	15.5	16.8	16.6	16.2	16.2	32.0	29.7	31.6	34.0	56.[illegible]
Alberta		812	520	616	644	699	1,221	1,017	1,068					77,357	301,027
%		0.17	0.1	0.1	0.1	0.1	0.2	0.2	0.2					38.2	45.1
Saskatchewan	602	605	614	654	556					117,490	1,205,304	1,150,531		418,294	586,[illegible]
%	0.11	0.11	0.11	0.12	0.1					53.6	56.4	54.6		57.7	84.3
Manitoba	862	319,452	354,492	815	707	619	836	774	13,110					145,284	17[illegible],[illegible]92
%	0.13	37.1	39.0	0.1	0.14	0.3	0.3	0.3	3.9					42.6	44.[illegible]
Ontario	279,753	325,785	337,302	325,988	348,466	350,383	363,963	389,354	418,064	542,779	660,776	673,924	593,424	701,041	740,384
%	35.49	37.1	38.6	37.3	38.7	37.6	36.6	39.1	38.1	43.8	51.6	50.8	43.3	50.1	54.3
Quebec		24,689	25,136	54,130	62,700	68,773	63,339	62,31[illegible]	70,640	32,427	132,131	111,553	283,471	29,469	390,783
%		5.8	6.0	13.0	14.1	13.9	13.3	13.6	13.8	13.3	16.0	17.6	42.2	44.6	58.1
New Brunswick	1,825	1,818	2,169	2,046	2,044	1,788	1,701	2,312	2,335	2,495	5,972	9,858	7,343	7,539	15,[illegible]
%	4.8	4.0	4.9	4.3	4.9	4.2	3.9	4.7	3.9	4.4	12.2	20.0	14.4	13.0	30.2
Nova Scotia	880	1,017	3,027	3,602	4,312	4,333	4,911	5,250	6,027	[illegible],025	6,435	8,650	10,484	10,632	26,989
%	2.10	2.4	7.0	8.2	9.4	9.5	10.7	11.9	11.9	[illegible].6	11.6	15.8	16.5	16.7	42.4
Prince Edward Island															7,983
%															20.5
Newfoundland															3,20[illegible]
%															
Canada	298,619	336,688	380,289	422,545	435,644	452,010	460,138	488,019	557,558	94,935	2,042,811	2,004,162	1,676,778	1,997,372	2,446,269
%	11.6	13.0	13.6	14.3	14.7	14.4	14.2	14.1	14.1	1.9	46.6	45.6	40.0	47.5	54.[illegible]

Source: Canada Department of Agriculture (Agriculture Canada). Marketing Boards Annual Reports. Ottawa, 1958-1971.

1. Revised Estimates.

2. Producers receipts as reported by some marketing boards were based on a crop-year and as reported by others included certain marketing charges.

to $422 million from $380 million in 1959 (from 13.6 percent of the total farm products marketed to 14.6 percent). The main factor contributing to this growth was the increase in the Quebec share (from 6.0 percent to 13.0 percent as given in Table 4-3).[1] The total value of agricultural marketings decreased slightly in Canada during 1960.

The provinces of Alberta, Saskatchwan, Manitoba and Quebec reported small decreases in the sale of farm products for the year. While there was a decline in total value of farm products marketed, the marketing boards' share of the total increased (representing 15.2 percent of the total farm products marketed). The development of marketing board plans and the increased amount of produce marketed through them in Quebec caused a shift in Ontario's marketing share from nearly 90.0 percent to 77.0 percent on a national basis.

There was another increase in the value of sales of farm products under marketing boards in 1961. On a national basis, the sales value increased by $13.1 million. The proportion of farm sales, compared with the total farm cash income, increased to 14.7 percent in 1961 compared with 14.5 in 1960. Ontario led in importance in marketing board sales with $348 million (77.0 percent).

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[1] The sales under the Quebec marketing plans increased from $25.0 million in 1959 to $70.0 million in 1960. V. A. Heighton, *Marketing Boards in Canada, 1960 National Summary,* (Ottawa: Economics Division, Canada Department of Agriculture, March, 1962), p. 3.

Quebec followed Ontario with $63.0 million (14.0 percent), and British Columbia followed Quebec with $16.0 million (11.6 percent).[1]

The 1962 sales of farm products under marketing boards accounted for $452 million, representing an increase of 1.7 percent in the total.

In 1963 the value of farm products sold through marketing boards reached $460 million, an increase of $8.0 million over 1962. It represented 14.2 percent of the total farm cash income received by Canadian farmers from the sale of their farm products, slightly above the 1962 figure. Ontario's share in this total value increased by $363 million's worth of farm products under different marketing schemes (representing about 80 percent of the total value of farm products marketed by marketing boards in Canada and 37 percent of the total cash income from the sales of all farm products in Ontario).

In 1964 there was another increase in the absolute value of sales of farm products through marketing boards but the percentage of the total did not change. Ninety marketing boards reporting business activities sold $488 million (14.1 percent of the total) worth of farm products during the year.

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[1] Marketing board sales shown as a percentage of farm cash income are given in Table 4-3 where the evident order of importance by province can be ascertained as: Ontario, 39.2 percent; Quebec, 14.3 percent; British Columbia, 11.6 percent; Nova Scotia, 9.6 percent; New Brunswick, 4.8 percent, and Prairie Provinces, each under 1.0 percent.

Total producers' receipts for the reporting marketing boards increased from $488 million in 1964 to $537 million in 1965, an increase of $49.0 million or 10 percent. Despite this 10 percent increase in absolute value of sales between 1964 and 1965, farm cash receipts as a proportion of the total cash income remained unchanged at 14 percent.[1]

1965-1971--Provincial analysis indicates that an increase in total producers' farm cash receipts in British Columbia was experienced--from $25 million in 1964 to $26.0 million in 1965. Producers' receipts under marketing boards accounted for 16.2 percent of the total cash income from sale of farm products in British Columbia. In Ontario, cash receipts under marketing boards increased by about $24 million (6.6 percent) in 1965 over 1964. Similarly, in Quebec the value of producers' receipts from reporting boards increased from $62.0 million in 1964 to $70.0 million in 1965 (or by 13 percent). Also, in Nova Scotia producers' receipts increased by 15 percent over 1964.

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[1] Total producers' receipts under marketing boards can be further dichotomized as receipts of producers under boards operating as or through marketing agencies, amounting to $286 million (53 percent), and under boards operating as negotiating agencies, $251 million (47.0 percent).

Producers' receipts for the 114 marketing boards reporting business activities in 1966 amounted to $1,794 million[1], and represented 41.9 percent of the total cash income from the sale of agricultural produce. Producers' income under boards operating as or through marketing agencies amounted to $1,464 million (82 percent) and under boards operating as negotiating agencies, $325 million (18 percent).

There was a substantial increase from $1,795 million in 1966 to $2,037 million in 1967, an increase of 14 percent. The proportion of farmers' cash income under marketing boards increased to $42.2 million in 1966, to $56.9 million in 1967 and to $61.2 million in 1968. In percentage terms, this trend, as a proportion of farm cash income received under marketing boards, increased from 16.2 percent in 1965 to 22.5 percent in 1966, to 32.0 percent in 1967 and to 29.7 percent in 1968. Similarly, in 1969 and 1970 an upward trend continued both in absolute and percentage terms. In 1969, $62.6 million worth of sales were made under the marketing boards, these increased to $67.7 million in 1970. Proportionately, however, a slight reduction was experienced in 1970 as the percentage share dropped from 31.6 percent in 1969 to 30.5 percent in 1970.

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[1] This includes receipts from the Canadian Wheat Board during 1966.

On a provincial basis, Table 4-3 indicates that there was an upward trend in both the absolute value of farm products marketed under the marketing boards and in the proportionate share in the total farm cash receipts in all provinces reporting marketing boards during 1966-70 period. The most prominent increases occurred in Quebec, Ontario and British Columbia, whereas Ontario has the highest proportion of its farm products sold under the provincial marketing boards.

Table 4-4 demonstrates the percentage increase in value of sales of farm products for five-year periods between 1958 and 1971. This analysis is made on a commodity basis for the country as a whole and substantiates the data found in Table 4-3.

Receipts and Proportions by Sale of Various Farm Commodities

Table 4-5 is included to show the dimension and importance of marketing boards according to different Canadian farm products sold under their jurisdictions for 1966-71 period. Starting in 1966, sales of grain accounted for 97.3 percent; potatoes and vegetables, 25.1 percent; fruits, 59.7 percent. In almost each of these farm products there was an improvement in the total value of sales of farm commodities under marketing boards in 1967. In 1968 dairy products, poultry and egg sales under marketing boards further increased as a proportion of the total sales of farm products over 1967 ratios. In 1970, 68.8 percent

Table 4-4

COMPARISON OF VALUE OF SALES BETWEEN 1958-71 FOR VARIOUS FARM COMMODITIES UNDER MARKETING BOARDS, CANADA
TIME SERIES ANALYSIS

Sales & Years Commodities	1958 Sales $000	1962 Sales $000	Increase Percentage 5 years 1958-1962 %	1967 Sales $000	Increase Percentage 5 years 1962-1967 %	1971 Sales $000	Increase Percentage 5 years 1967-1971 %	Increase Percentage 13 years 1958-1971 %
Dairy Products	99,604	140,942	41.5	314,883	123.4	675,276	114.5	578.0
Hogs	93,993	106,149	12.9	174,048	85.1	239,842	37.8	155.2
Tobacco	85,504	91,701	7.2	139,969	63.7	135,389	-2.3	58.3
Honey, Sugar Beets, etc.	23,623	26,669	12.9	139,962	492.5	-	-	-
Potatoes & Vegetables	23,780	25,872	8.8	42,558	78.9	51,912	122.0	118.3
Fruits	19,505	25,714	31.8	47,299	142.5	47,555	0.5	143.8
Wheat	15,247	15,381	0.9	-	-	-	-	-
Forest & Maple	1,035	12,032	1062.5	25,682	2381.4	-	-	-
Poultry	-	7,448	-	76,990	903.3	202,514	163.0	-
Other	65	102	56.9	30,676	-	49,550	61.5	-
TOTAL	362,356	452,010	24.7	1,041,939	463.5	2,446,269	134.8	575.1

Source: Canada Department of Agriculture (Agriculture Canada), Marketing Boards Annual Reports. Economics Branch, Ottawa, 1958-1971.

of dairy products were sold under marketing boards, while the proportions for poultry and eggs were 52.0 and 20.9 percent, respectively.[1] For dairy products this could be attributed to a provincial plan for milk that was put into effect in Quebec in 1969. Receipts of five hog marketing boards, representing $213 million, accounted for 46 percent of the cash income from the sale of hog products. In total, the number of producers' marketing boards increased by 25 percent in 1969 over 1968, and producers' receipts increased by about $114 million.

Four new boards came into existence during 1970[2], although the share of sales did not change a great deal between various commodities. The estimated percent of Canadian producer receipts from marketing boards of total farm cash income were: grains, 88.3 percent; dairy products, 68.8 percent; fruits, 55.0 percent; hogs, 52.2 percent; poultry, 52.0 percent; vegetables, 27.0 percent; eggs,

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[1] This increase may be attributed, for dairy products, to a provincial plan for milk that came into effect in Quebec in 1969 to cover all of the province, while earlier only regional plans were in effect. Thirty-six dairy boards reported their sales amounting to $390 million and represented about 58.0 percent of the cash income from the total sales of dairy products in Canada.

Marketing boards had jurisdiction over most of the wheat, oats, barley and tobacco grown in Canada with more than $800 million in producers' receipts.

[2] The British Columbia Grape Marketing Board, the Alberta Fresh Vegetable Commission, the Saskatchewan Commercial Egg Producers' Marketing Board and the Newfoundland Egg Marketing Board.

Table 4-5

RECEIPTS AND PROPORTION OF AGRICULTURAL COMMODITIES UNDER PRODUCER MARKETING BOARDS IN CANADA

Commodities	Cash Income From Sales of Agricultural Products	Producers' Receipts	
		Value	Proportion
	$'000		%
	1966		
Wheat, oats & barley	1,149,457	1,117,821	97.3
Potatoes & vegetables	159,064	39,988	25.1
Fruits	75,883	45,316	59.7
Tobacco	157,911	154,299	100.0
Cattle & calves	888,299	0	0.0
Hogs	421,016	165,941	39.4
Dairy Products	594,829	178,129	29.9
Poultry	232,569	49,706	21.4
Eggs	169,755	0	0.0
Forest & Maple product	37,560	15,371	40.9
Others	435,293	28,434	6.5
TOTAL	4,290,053	1,794,915	41.9
	1967		
Wheat, oats & barley	1,200,409	1,176,679	98.0
Potatoes & vegetables	147,216	42,558	28.9
Fruits	91,278	[illegible]	57.6
Tobacco	141,405	[illegible]	100.0
Cattle & calves	912,333	0	0.0
Hogs	405,083	174,048	42.[illegible]
Dairy Products	629,836	314,465	50.0
Poultry	224,780	[illegible]	44.3
Eggs	149,646	[illegible]	[illegible]
Forest & Maple product	35,135	25,692	73.6
Others	422,157	[illegible]	7.3
TOTAL	4,505,135	[illegible]	45.7
	1968		
Wheat, oats & barley	1,1[illegible]5,942	1,109,920	96.3
Potatoes & vegetables	155,081	46,342	29.9
Fruits	86,579	50,268	58.1
Tobacco	142,374	188,761	100.0
Cattle & calves	989,563	0	0.0
Hogs	411,900	168,977	41.2
Dairy Products	648,[illegible]	329,250	51.1
Poultry	[illegible]	88,517	38.7
Eggs	163,821	17,951	10.9
Other	313,772	47,870	13.3
TOTAL	4,[illegible]3,219	2,004,162	45.9
	1969		
Wheat, oats & barley	[illegible]	[illegible]	93.1
Potatoes & vegetables	[illegible]	53,168	33.7
Fruits	81,728	41,[illegible]	47.[illegible]
Tobacco	148,981	[illegible]	100.0
Cattle & calves	964,119	0	0.0
Hogs	463,959	[illegible]	[illegible]
Dairy Products	670,987	388,[illegible]	57.6
Poultry	28[illegible]	111,[illegible]	38.8
Eggs	186,450	19,500	10.5
Other	439,855	50,154	11.5
TOTAL	4,[illegible]	[illegible]	41.5
	1970		
Wheat, oats & barley	854,174	[illegible]	[illegible]
Potatoes & vegetables	190,[illegible]	[illegible]	[illegible]
Fruits	81,178	[illegible]	[illegible]
Tobacco	154,903	[illegible]	[illegible]
Cattle & calves	978,092	0	[illegible]
Hogs	461,976	[illegible]	[illegible]
Dairy Products	743,810	[illegible]	[illegible]
Poultry	258,859	138,[illegible]	[illegible]
Eggs	172,095	[illegible]	20.9
Other	259,151	[illegible]	19.[illegible]
TOTAL	4,164,708	1,[illegible]	47.[illegible]
	1971		
Wheat, oats & barley	[illegible]	908,887	82.7
Potatoes & vegetables	177,880	51,912	29.2
Fruits	88,920	47,[illegible]	[illegible]
Tobacco	135,509	[illegible]	100.0
Hogs	447,[illegible]	[illegible]	94.[illegible]
Dairy Products	743,[illegible]	511,[illegible]	[illegible]
Poultry	[illegible]	[illegible]	37.8
Eggs	149,9[illegible]	52,288	[illegible]
Other	[illegible]	89,[illegible]	[illegible]
TOTAL	4,538,111	[illegible]	[illegible]

Source: Canada Department of Agriculture Marketing Boards in Canada Annual Reports 1966-71. Grain figures include an adjustment for the intra-farm sales.

21.9 percent and other products, 19.1 percent. Total producers' receipts from boards expressed as a percent of total farm cash income were about 47.3 percent in 1970, compared to approximately 41.0 percent in 1969.

On a commodity basis, the percentage of farm cash receipts through marketing boards for 1971 was at a high level for grains, dairy products and poultry (85 percent, 84 percent and 78 percent, respectively). Producers' receipts through provincial egg marketing boards, at 36.0 percent of total egg receipts, were almost double those of the previous year.[1] There were 93 individual marketing boards in Canada--a decline of 8 boards from 1970. Value of receipts paid to producers under marketing board jurisdiction was $2,446 million, an increase of $449 million or 22.0 percent over 1970. Producers' marketing board receipts, as a proportion of total farm cash receipts, rose to 54.0 percent--a significant gain over the previous year. More than half the yearly increase of $449 million producers' receipts for 1971 was accounted for by the Canadian Wheat Board ($233 million). For the balance of the increase, $216 million, newly surveyed dairy and poultry boards accounted for $71 million.

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[1] For eggs, proportions were low because several provinces had established marketing boards in 1971 and 1972 and also egg producers within the range of 200-500 layers were exempted from egg marketing board regulations in various provinces.

Summary

The first marketing board in Canada was established in British Columbia in 1927. With a brief lapse, the number of marketing boards has continuously increased. Since then, the greatest growth in their number was experienced during the 1955-69 period. There were only 32 marketing boards in 1956, they increased to 122 by 1969. During 1970 and 1971, a consolidation of several Quebec milk boards resulted in a reduction of the total number of marketing boards operating in Canada.

In 1969 more than 50.0 percent of the marketing boards were located in the Province of Quebec, 18.0 percent in Ontario and 7.0 percent in British Columbia. This meant that 95 out of 122, or 77.0 percent, were located in these three provinces. This proportion, however, changed substantially during 1970 and 1971 due to the consolidation of several milk boards in Quebec and to an increase in the number of boards in other provinces.

Analysis also suggested that an increasing number of farmers marketed their produce through marketing boards during 1957-1971 period. In 1957, for example, 165,562 farmers marketed their produce through marketing boards, in 1971 the number had increased to 489,488.

Similar to the increasing number of producers coming under the jurisdiction of marketing boards, the proportion of farm products as regulated by marketing boards also increased substantially during the 1957-1971 period.

On a provincial basis during the 1966-70 period there was an increase in the absolute value of farm products marketed under the marketing boards and in their proportionate share of total farm cash receipts. The most prominent increases occurred in Quebec, Ontario and British Columbia, with Ontario having the highest proportion of its farm products sold under provincial marketing boards.

An analysis of the receipts and proportions of various farm commodities sold by marketing boards was also attempted. It indicated that a substantial improvement in the total value of sales of farm commodities under marketing boards took place during the 1960-71 period and many new farm products were regulated by the new marketing boards during 1960-71, indicating an increasingly important role for Canadian marketing boards.

CHAPTER V

THEORETICAL CONSIDERATIONS IN THE OPERATION OF MARKETING BOARDS

Concentration in Canadian Agribusiness Sectors

In previous chapters it was indicated that marketing boards in Canada were established on a commodity basis. Their main objective was to maximize farmers' aggregate net returns under legislatively authorized powers to manage the supply of regulated farm products through either marketing or production quotas.[1] A need was seen for marketing boards in Canada because the existing income and price problems of the primary agricultural sector could not be solved unless farmers were provided with sufficient control over the supply of farm products to allow them a countervailing power[2] vis-a-vis the agribusiness sector.

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[1] Production quotas are applied in the case of various provincial milk control boards and Ontario Flue Cured Tobacco Marketing Board.

[2] J. K. Galbraith, *American Capitalism. The Concept of Countervailing Power* (London: Hamish Hamilton, 1957). Professor Galbraith's account of American capitalism in terms of the concept of countervailing power may be seen as an attempt to substitute a bilateral monopoly-inspired model for the classic competitive model. It brought the idea of bargaining power from the periphery of economic theory to the very centre. An effective way to generate "countervailing power" for farmers was to introduce market control, envisaging supply management of farm products.

Because there had been few attempts to measure quantitatively the size distribution of firms (concentration level) in Canadian agribusiness, it was not possible to present the specific magnitude of concentration as such.[1] However, the available information contained in Table 5-1 reveals that the ten most important agribusiness sectors had substantial concentration at the twelve enterprises level in 1968. Similar conclusions were forthcoming from the earlier years of the last decade when attempts to establish different provincial marketing boards were in full swing. Sectors identified in Table 5-1 represent processors or wholesalers in the agribusiness system and provide some evidence of the substantial market power that existed and that farmers had to face in selling their primary products.

From Table 5-1 it is also evident that the highest concentration existed in the Tobacco Products Manufacturing Sector where twelve enterprises accounted for 99.5 percent of the total value of shipments. The second highest concentration level was in the Breakfast Cereal Manufacturers Sector (99.2 percent), followed by Flour Mills (88.2 percent) and Biscuit Manufacturers (81.5 percent). Poultry Processors had a high concentration ratio with 47.5 percent of the total value of shipments being controlled by

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[1] Concentration may be defined as a percentage of total sales by 4, 8, or 12 firms in an industry.

Table 5-1

RELATIVE IMPORTANCE OF THE LEADING TWELVE ENTERPRISES RANKED BY VALUE OF SHIPMENTS OF THEIR OWN PRODUCTS
TEN AGRIBUSINESS SECTORS
CANADA
1968

Name of Agribusiness Sectors	Total Number of Establishments	Value of Shipments	Proportion of Total Value of Shipments of 12 Leading Enterprises
		$'000	
1. Poultry Processors	36	202,235	47.5
2. Dairy Factories	158	662,616	33.2
3. Fruits & Vegetable Canners & Processors	56	461,966	52.1
4. Feed Manufacturers	149	349,404	38.7
5. Flour Mills	38	376,089	88.2
6. Breakfast Cereal Mfrs.	16	101,434	99.2
7. Biscuit Mfrs.	28	185,694	81.5
8. Bakeries	115	360,977	43.8
9. Confectionery Mfrs.	21	251,406	67.4
10. Tobacco Products Mfrs.	24	645,757	99.5

Source: Information obtained and computed from Statistics Canada, Ottawa, 1973.

the leading twelve enterprises.

Fundamental Explanation of Concentration

Although relatively few attempts have been made to measure the size distribution of firms (concentration level), some theoretical explanations of the social structure and organization, of which the size and number of firms were a part, do exist. Among these, the institutionalist theory[1], theories of social action and classes[2], and the structural functional theory[3] were relevant and useful in explaining market power in the agribusiness sector. These theories have associated market power with the level of concentration.

Schumpeter, in his "Theory of Economic Development"[4] predicted concentration in retailing during the development process. He suggested, however, that small-scale retailers might survive by wielding political power (countervailing power) and also by taking up some of the functions that the large-scale retailers undertook.

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[1] John K. Galbraith is the exponent of this theory in the modern context. An earlier exposition of this theory in a traditional style appeared in: John R. Commons, *Institutional Economics* (New York: The MacMillan Co., Inc. 1936).

[2] Max Weber, *Theory of Social Economic Organization* (New York: Oxford University Press, 1947).

[3] Wroe Alderman, *Marketing Behavior and Executive Action* (Homewood, Illinois: Richard D. Irwin, 1957).

[4] Joseph A. Schumpeter, *The Theory of Economic Development* (Cambridge: Harvard University Press, 1934). Schumpeter outlines the process of how the large-scale retailers developed and how the small-scale retailers disappeared through the actions of his "innovating entrepreneur" and "process of creative destruction."

A socio-economic theory of retail concentration, as advanced by Morgan[1], provided a support of the hypothesis that the size distribution of firms in food retailing and service industries was determined (on supply side) by the quality of the entrepreneur and the availability of human labor and (on demand side) by demographic features of population as these changed with economic growth. According to Morgan's hypothesis, economic development required shifts in labor resources from extractive industries to service industries. These shifts were reflected in rural-to-urban migration and occupational changes in which labor was "pushed" from increasingly capital-extensive agriculture and "pulled" toward labor-extensive service industries by technological and cultural changes which accompanied economic growth. This labor force consisted of both entrepreneurs and unskilled labor. The proportion and quality of both may determine the number of retail firms. With economic growth there was a shift from self-employment in petty trade to wage employment in large retail firms, thus increasing concentration.

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[1] Howard E. Morgan, "Concentration in Food Retailing," *Journal of Farm Economics*, Vol. 47, No. 5 (December, 1965). This may be considered as an extension of the Schumpeterian thesis of "innovative entrepreneur" and "process of creative destruction."

Similarly, on demand side, the demand for food-retailing services also affected the size of firms and, consequently, concentration. Economic growth was associated with greater population size and density, urbanization, nucleation and racial homogeneity. These demographic changes tended to lower the store-to-population ratio for food and "necessity-type goods", while increasing it for "luxury" goods and services. These changes created conditions favourable to the emergence of large-scale retailing.

These socio-economic factors generated a favourable environment for increasing concentration in the food processing and retailing sector and worsened farmers' bargaining power[1] in marketing their primary products. Their ability to bargain with influence to bring about a desired change in prices decreased as concentration in the sector purchasing their primary products increased.[1]

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[1] In Canada food processing and retailing saw an overall decline in the number and an increase in the size of outlets, and to some extent, there had been attrition in the independently-owned family-type grocery store. Corporate chains and retailers in voluntary groups increased in number and expanded in sales volume. Similarly, an increasing concentration of management and control in the structure of food processing sector in Canada was experienced. During 1961-70, 25 percent of establishments manufacturing food and beverages closed down but their total sales increased by over 70 percent. P. Moore, "Farm-Food Marketing Costs," *Canadian Farm Economics,* Vol. 8, No. 4 (August, 1973); Max D. Stewart, *Concentration In Canadian Manufacturing and Mining Industries: Background Study to the Interim Report on Competition Policy* (Ottawa: Economic Council of Canada, August, 1970).

As indicated earlier, producers felt that an increase in their countervailing power could be achieved by developing a compulsory organization, giving them powers to manage both the supply and terms of sale of their product. Marketing boards in Canada thus present the following situation: (1) boards embrace all producers whose number is fixed[2], and (2) boards have attempted to control their members' production, each being assigned a production quota (tobacco and milk) or marketing quotas (broilers, eggs, turkeys, etc.). Realistically, as the situation exists in Canada, marketing boards with quota issuing powers sell to a relatively few dominant processor-distributors.

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[1] A brief survey of bargaining theory may reveal that most important contributions were made by: Edgeworth [F. Y. Edgeworth, *Mathematical Physics* (London: C. Kegan Paul, 1961)], by Von Newmann and Margensten [J. Von Newmann and O. Morgensten, *Theory of Games and Economic Behavior* (New York: John Wiley & Sons, 1964)], by Zeulthen [F. Zeulthen, *Problems of Monopoly and Economic Welfare* (London: Routledge & Sons, 1930)], by Nash [J. F. Nash, "The Bargaining Problem," *Econometrica*, Vol. 18 (1950)], by Pen [J. Pen, "A General Theory of Bargaining," *American Economic Review*, Vol. 42 (1952)], by Bishop [R. L. Bishop, "A Zeulthen-Hicks Theory of Bargaining," *Econometrica*, Vol. 32 (1964)] and by Cross [J. G. Cross, "A Theory of the Bargaining Process," *American Economic Review*, Vol. 55 (1965)].

[2] In the case of chicken broilers, turkeys and eggs, provincial marketing plans have a minimum size of enterprise clause that gives exemption to some producers.

Economic Models Which Attempt to Explain Various Facets of Marketing Board Supply Management Policies

Several theoretical models could be developed to explain how the various facets of supply management through quota policies helped achieve the objective of maximizing aggregate net returns of the farmers. Some of the relevant theoretical models related to different aspects of quota policies as used by the Canadian marketing boards are presented here.

A Cut in Supply Raises Price and Total Revenue[1]

Theoretically, marketing quotas imply "holdback" of farm produce from the market, seemingly identical in effect to the restriction of production. If farmers sell (or produce) a smaller total quantity of a farm product, they will each receive a higher total price. Since the demand for farm products is generally inelastic, limiting supply will actually raise the total revenue received by farmers. A cut in supply that raises price and total revenue is illustrated by Figure 5-1.

Before supply limitations S_1S_1 supply curve intersects the inelastic d_1d_1 curve at a lower price p_1 determined by the intersection of S_1S_1 and d_1d_1 at E_1. As an individual competitor, each farmer has no motive other

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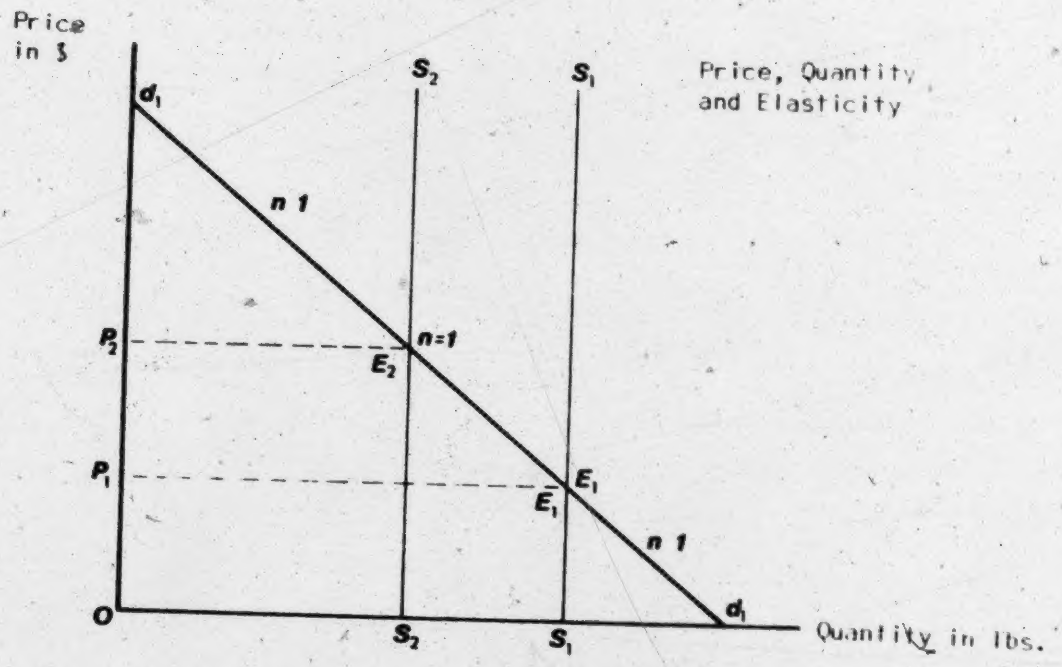
[1] Paul A. Samuelson and Anthony Scott, *Economics: An Introductory Analysis* (Toronto: McGraw-Hill Company of Canada Limited, 1968), p. 464.

FIGURE 5-1

PRICE REVENUE RELATIONSHIP


Price
in $
S₂
S₁
Price, Quantity
and Elasticity
d₁
n 1
P₂
n=1
E₂
P₁
E₁
E₁
n 1
O
d₁
S₂
S₁
Quantity in lbs.

than to improve the situation. When they all form a marketing board to put monopolistic limits on their total supply, they can benefit by raising price.

When supply management (marketing or production quotas) reduces supply from S_1S_1 to S_2S_2, p_1 rises to P_2 by shifting intersection point E_1 to E_2. With inelastic demand, total gross farm income is thereby increased.

Farmers' revenue being the product of price and quantity sold, can be measured at E_1 and E_2 by the rectangular areas $OS_1E_1P_1$and $OS_2E_2P_2$, respectively. The gain in E_2 height over E_1 outweighs the rectangle's loss in width.[1]

This analysis underlies the principles involved in the basic theory of monopoly and emphasizes the role of marketing boards' quota policies as directed for managing the supplies of the farm products in a way similar to a monopolist. Therefore, it seems relevant to present the basic theory of monopoly and to show the various forms a monopolist can take in different situations. These situations represent, in general, the forms that marketing boards can undertake.

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[1] This is because the demand for farm products is, in general, inelastic; with elastic demand, the reverse would be true.

The Basic Theory of Monopoly[1]

In principle, the monopolist firm is the industry; it has no competitors. A monopolist's individual demand curve possesses the same general properties as the industry demand curve for a perfectly competitive market.[2] His supply schedule is a single-valued function of the price which he charges:

$$q = f(p) \tag{5-1}$$

with $\partial q/\partial p < 0$

This can be expressed also as:

$$p = F(q)$$

since the demand curve has an inverse relationship and price expressed as a single-valued function of quantity,[3] where $\partial p/\partial q < 0$. The monopolist's total revenue (R) is price multiplied by quantity sold:

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[1] J. M. Henderson and R. E. Quandt, *Micro-Economic Theory--A Mathematical Approach* (New York: McGraw-Hill Book Company, 1971), Chapter 6.

[2] It is an aggregate of the demand curves of individual consumers and is assumed to be negatively sloped.

[3] A major difference between a monopolist and a perfect competitor is that the monopolist's price decreases as he increases his sales. A perfect competitor accepts price as a parameter and maximizes profit with respect to variations of his output levels. A monopolist maximizes his profit with respect to variations of either output or price.

$$R = pq \qquad (5\text{-}2)$$

and his marginal revenue (MR) is the derivative of his total revenue with respect to his output level

$$MR = \frac{\partial R}{\partial q} = P + q\frac{\partial P}{\partial q} \qquad (5\text{-}3)$$

with $\partial P/\partial q < 0$. Hence, $MR < P$.

This implies that a monopolist's[1] marginal revenue equals price less the rate of change of price with respect to quantity multiplied by quantity $\left(q\frac{\partial P}{\partial q}\right)$. The monopolist must decrease the price he receives for every unit in order to sell an additional unit.[2]

Figure 5-2 depicts a linear demand curve and a marginal revenue curve. It shows that the demand is monotonically decreasing and marginal revenue is less than the price for every sale greater than zero. The rate of decline of marginal revenue is twice the rate of decline of

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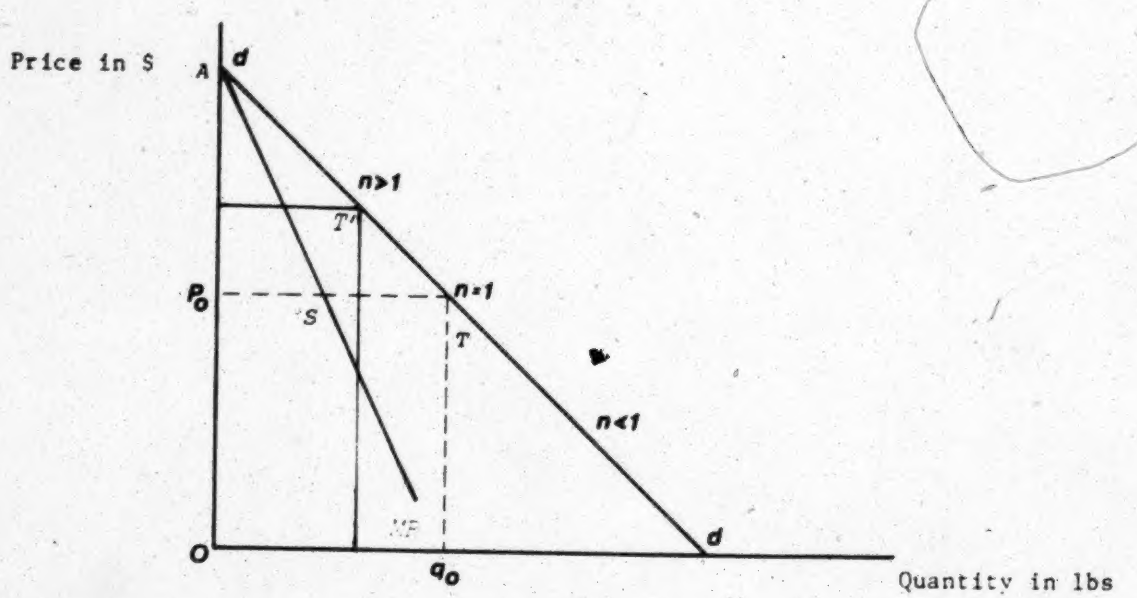
[1] Marginal revenue of a perfect competitor equals price since in his case $\partial p/\partial q = 0$.

[2] In the case of the perfect competitor, if he expands his sales by 1 unit, his revenue increases by the market value of the additional unit.

FIGURE 5-2

TOTAL REVENUE AND ELASTICITY OF DEMAND



price.

$$p = a - bq; \quad R = aq - bq^2; \quad MR = \frac{\partial R}{\partial q} = a - 2bq \qquad (5\text{-}4)$$

Since $\partial p/\partial q = -b$ is a constant, the distance between the two curves $\left(q\frac{\partial p}{\partial q} = bq\right)$ is a linear function of sales. Total revenue for the price-quantity combination (p^0, q^0) equals the area of the rectangle OP^0Tq^0. The area $OASq^0$, lying under the MR curve, also equals total revenue,[1] i.e.:

$$(a - 2\,bq)\ \partial q = pq = R \qquad (5\text{-}5)$$

Marginal revenue (MR) can be expressed in terms of price and demand elasticity[2] as:

$$MR = p\left(1 + \frac{q}{p}\,\frac{\partial p}{\partial q}\right) = p\left(1 - \frac{1}{\eta}\right) \qquad (5\text{-}6)$$

Marginal revenue is positive if $\eta = 1$ and negative if $\eta < 1$.

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[1] A similar result applies to non-linear demand curves as $\int_0^a$. Since the integration constant always equals zero, total revenue is given by the area under the marginal revenue curve.

[2] The elasticity demand (η) at a point on a demand curve is defined as the absolute value of the rate of percentage change of output divided by the rate of percentage change of price: $\eta = \frac{\partial(\log q)}{\partial(\log p)} = \frac{p}{q} \cdot \frac{\partial q}{\partial p}$

The difference between marginal revenue (MR) and price (p) decreases as demand elasticity (η) increases, and marginal revenue (MR) approaches price (p) as demand elasticity (η) approaches infinity.

A total revenue curve, corresponding to the linear demand curve (Figure 5-2), would be a parabola (Figure 5-3).

Marginal revenue (MR) monotonically decreases and reaches zero at the sales level q^0. Total revenue (R) increases where $\eta>1$ for $q<q^0$; it is a maximum where $\eta=1$ for $q=q^0$ and declines where $n<1$ for $q>q^0$. This can be depicted by Figure 5-2.[1]

The basic theory of profit maximization in case of a monopolist can be dichotomized first from the point of view of the cost function and second from the production function.

In terms of cost function, the monopolist's total revenue and total cost are considered and expressed as functions of output.

$$R = R(q) \text{ and } C = C(q) \qquad (5\text{-}7)$$

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[1] Above $\eta=1$, demand is elastic with $n>1$; at $n=1$, demand is of unitary elasticity; with $\eta<1$, demand is inelastic. Paul A. Samuelson and Anthony Scott, *Economics: An Introductory Analysis* (Toronto: McGraw-Hill Company of Canada Limited, 1968), p. 425.

Monopolist's profit (Π) being the difference between his total revenue and total cost,

$$\Pi = R(q) - C(q) \tag{5-8}$$

Therefore, maximization of profit (Π) can be indicated by setting the derivative of profit equation with respect to quantity sold (q) equal to zero (First Order Condition).

$$\frac{\partial \Pi}{\partial q} = R'(q) - C'(q) = 0 \tag{5-9}$$

or $R'(q) = C'(q)$, indicating that marginal revenue (MR) must equal marginal cost (MC) for profit maximization.[1]

The second order condition for profit-maximization requires that:

$$\frac{\partial^2 \Pi}{\partial q^2} = R''(q) - C''(q) < 0 \tag{5-10}$$

or adding $C''(q)$ to both sides of the inequality.

---

[1] The monopolist can increase his profit by expanding (or contracting) his output, as long as the addition to his marginal revenue (MR) exceeds (or is less than) the addition to his cost (MC). Since the marginal revenue (MR) is positive for a profit-maximization output, it follows from $MR = p\left(1 - \frac{1}{\eta}\right)$ that the monopolist will always select an elastic point on his demand curve (where $\eta > 1$). In the case of perfect competition there is no similar restriction upon the equilibrium value of η. James M. Henderson and Richard E. Quandt, *Micro-Economic Theory: A Mathematical Approach* (New York: McGraw-Hill Book Company, 1971), pp. 211-215.

$R''(q) < C''(q)$, implying that the rate of increase of the marginal revenue must be less than the rate of increase of the marginal cost.[1]

In terms of the production function, with an assumption that the monopolist uses two inputs which he purchases in competitive markets to produce his output, his profit can be expressed as:

$$\Pi = R(q) - r_1x_1 - r_2x_2 \qquad (5\text{-}11)$$

Setting the partial derivatives of profit with respect to inputs equal to zero.

$$\frac{\partial\Pi}{\partial x_i} = R'(q)h_i - r_i = 0 \qquad i = 1, 2, \ldots \qquad (5\text{-}12)$$

where $q = h(x_1, x_2)$ and $H_i = \partial q/\partial x_i$.

Rearranging terms:

$$R'(q)\ h_i = r_i \qquad i = 1, 2, \ldots \qquad (5\text{-}13)$$

For profit maximization the monopolist must set the value of the marginal revenue product of each input equal to its price.[1]

---

[1] The Second-Order Condition is satisfied if the marginal revenue (MR) is decreasing and the marginal cost (MC) is increasing.

For profit maximization the second order condition requires[2] that:

$$\pi_{11} < 0,\ \pi_{22} < 0 \text{ and } \pi_{11}\pi_{22} - \pi^2_{12} > 0$$

where $\pi_{ij} = \partial^2_\pi/\partial x_i \partial x_j$, which by further differentiation of

$$\frac{\partial \pi}{\partial x_i} = R'(q)\ h_i - r_i = 0 \text{ results in}$$

$$\pi_{ii} = R'(q)\ h_{ii} + R''(q)\ h^2_i < 0 \qquad i = 1, 2, \ldots \qquad (5\text{-}14)$$

which, by rearranging, equals $2\ R''(q) < -\dfrac{R'(q)h_{ii}}{h^2_i}$

$$= -\frac{r_i h_{ii}}{h^2_i} = C''(q)$$

The basic theory of monopoly as presented above can be modified to cover a wide variety of situations. Marketing boards, with their different kinds of quota policies, represent several of these situations. The relevant

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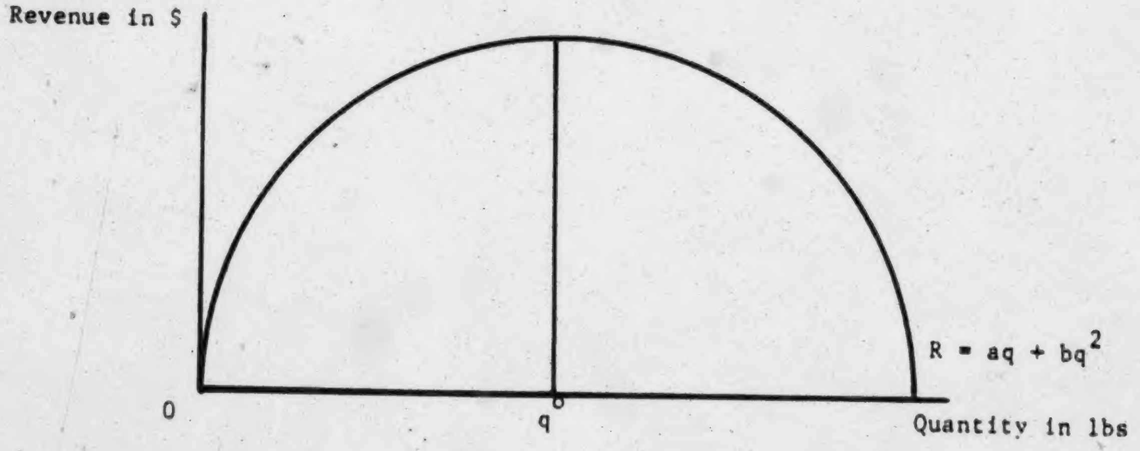
[1] In the case of a monopolist marginal revenue times marginal product equals input price. In perfect competition, output price times marginal product equals input price.

[2] The marginal cost (MC) obtained by varying either of the inputs cannot exceed marginal revenue (MR) and inequality $\pi_{11}\pi_{22} - \pi^2_{12} > 0$ requires that the marginal cost (MC) obtained by varying both inputs cannot exceed the marginal revenue (MR).

FIGURE 5-3

TOTAL REVENUE CORRESPONDING TO MEAN DEMAND CURVE



cases are of marketing boards as a discriminating monopoly, a multiplant monopoly, a revenue maximizing monopoly, etc. An integration of these cases can be visualized as a marketing board being a multiplant, market-discriminating monopoly with an economic objective of revenue-maximization for the industry as a whole. The next sections deal with theoretical aspects pertinent to these special modifications that draw heavily on the basic theory of monopoly discussed above.

Theory of Discriminating Monopoly

A monopolist may not always sell his entire output in a single market for a uniform price. He may sell in two or more distinct markets at different prices and thereby increase his profit.[1] In this situation a monopolist's profit is the difference between his total revenue from all markets and his total cost of production. A market discriminating marketing board would consider this aspect in arriving at quota and price decisions for its members. This relationship can be expressed as:

---

[1] In a domestic market price discrimination is feasible only if buyers are unable to purchase the product in one market and resell it in another. Otherwise speculators would buy in a low-price market and resell in a high-price market at a profit and thereby equalize price in all markets. Explicitly, price discrimination, as a concept used by marketing boards in general, has been described as the practice of a monopolist charging different prices in different markets where the price differentials do not reflect differences in the costs of transportation or transferral associated with the different markets: J. S. Bain, *Pricing, Distribution and Employment*, Revised Edition (New York: Holt, Rinehart and Winston, 1962), pp. 400-401.

$$\Pi = R_1(q_1) + R_2(q_2) - C(q_1 + q_2) \tag{5-15}$$

where q_1 and q_2 are the quantities which he sells in the two markets, $R_1(q_1)$ and $R_2(q_2)$ are his revenue function and $C(q_1 + q_2)$ is his cost function. Differentiating and setting the partial derivatives equal to zero:

$$\frac{\partial \Pi}{\partial q_1} = R_1'(q_1 + q_2) - C'(q_1 + q_2) = 0$$

$$\frac{\partial \Pi}{\partial q_2} = R_2'(q_2) - C'(q_1 + q_2) = 0 \tag{5-16}$$

or

$$R_1'(q_1) = R_2'(q_2) = C'(q_1 + q_2). \tag{5-17}$$

The marginal revenue in each market must equal the marginal cost of the output as a whole. Figure 5-4 depicts these theoretical aspects graphically. Decision-making under price discrimination is achieved through horizontal summation of the marginal revenue curves for the firm's submarkets. EF on the total marginal revenue curve (R_tM_t)equals the total marginal cost (MC) at F. This total quantity represents OQ_1 and OQ_2. Prices in both markets are P_1 and P_2--the points on the average revenue (demand) curves corresponding to these quantities.[1]

Theory of the Multiplant Monopolist

This differs from the previous case of discriminating monopoly in the sense that output originates in more than one plant but is sold in a single market. Profit here is the difference between the total revenue and total production costs for both plants and can be shown as:

$$\Pi = R(q_1 + q_2) - C_1(q_1) - C_2(q_2) \qquad (5\text{-}18)$$

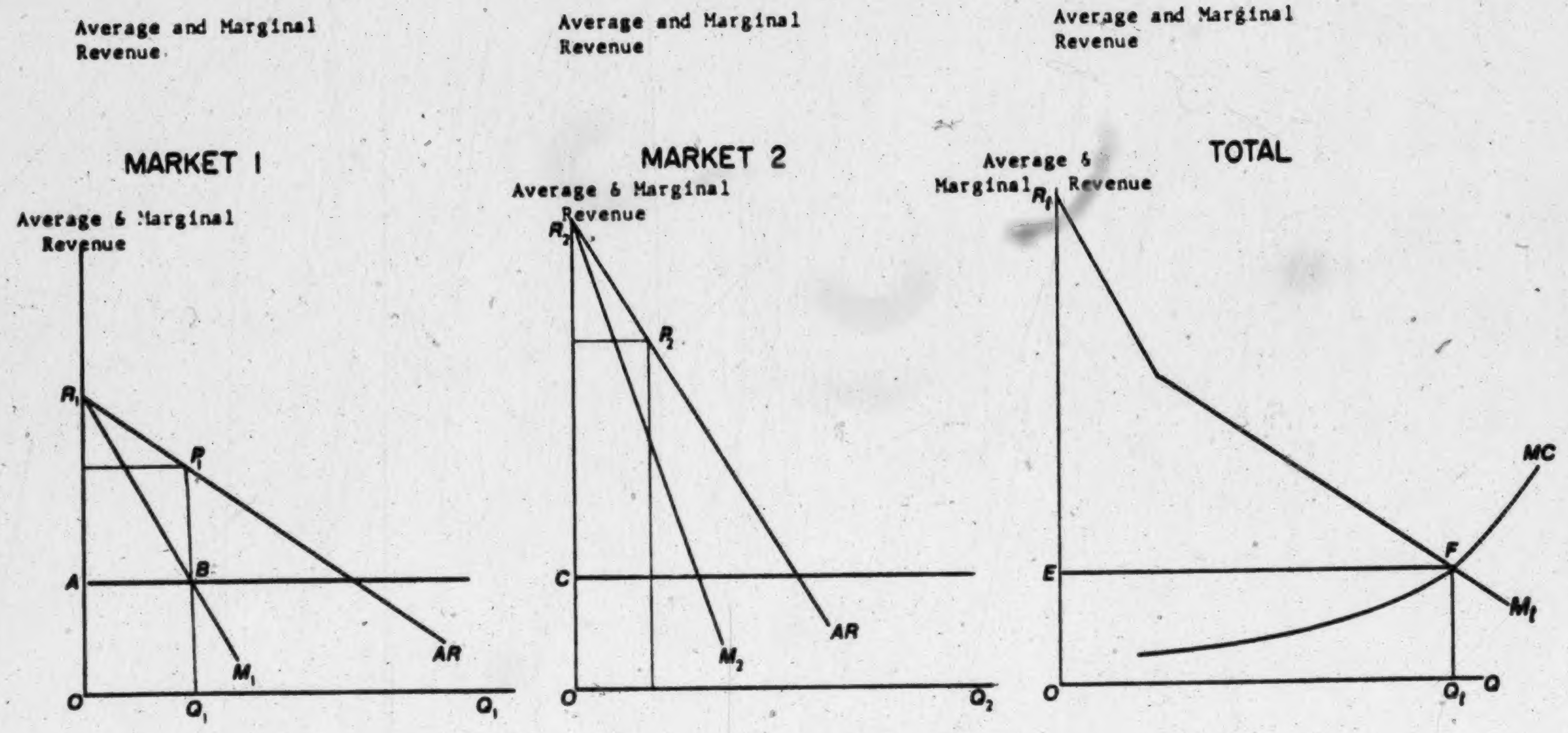
where q_1 and q_2 are the quantities which the monopolist produces in two plants, $R(q_1 + q_2)$ is monopolist's revenue function and $C\,(q_1)$ and $C\,(q_2)$ are his costs functions. Setting the partial derivatives of profit function equal

---

[1] William J. Baumol, *Economic Theory and Operations Analysis* (Englewood Cliffs, N.J.: Prentice Hall, Inc., 1965), p. 324. It illustrates only one conclusion of price discrimination theory. If a profit-maximizing discriminating monopolist is faced with two independent markets, 1 and 2, then $MR_1 = MR_2$ and if $\eta_1 = \eta_2$, then $P_1 = P_2$. It suggests that, in case the demand functions are isoelastic over the range of the board's activities, then price discrimination between the separated independent markets is profitable and $MR_1 = MR_2$. If $\eta_1 \gtrless \eta_2$, then $P_1 \gtrless P_2$. It connotes that the profit-maximizing board would allocate the given supply which it has to dispose of by sale, by limiting supplies (and raising prices) in the relatively inelastic market and diverting supplies into the relatively elastic market where, consequently, a relatively lower price would prevail. The greater the differences in elasticity, the greater the divergences between revenue-maximizing prices and the greater the potential gain to the board. J. C. Abbott, "Agricultural Marketing Boards in the Developing Countries," *Journal of Farm Economics,* Vol. 49, No. 3, (August, 1967).

FIGURE 5-4

PRICE & QUANTITY DECISION MAKING BY A DISCRIMINATING MONOPOLY



to zero:

$$\frac{\partial \Pi}{\partial q_1} = R'(q_1 + q_2) - C_1'(q_1) = 0$$

$$\frac{\partial \Pi}{\partial q_2} = R'(q_1 + q_2) - C_2'(q_2) = 0$$

or

$$R_1'(q_1 + q_2) = C_1'(q_1) = C_2'(q_2) \qquad (5\text{-}19)$$

This implies that the marginal cost (MC) in each plant must equal the marginal revenue (MR) of the output as a whole.

Theory of the Revenue Maximizing Monopolist

Many large firms do not maximize profit, but rather maximize sales revenue subject to constraints that profit equal or exceed some minimum acceptable level. The monopolist desires to maximize R(q) subject to:

$$\Pi = R(q) - C(q) \geq \Pi^0$$

where Π^0 is the minimum acceptable profit. The revenue-maximizing monopolist will continue to increase sales until either he reaches the unrestricted maximum of R(q) or is satisfied as an equality, which ever occurs at the lower output.

All these three cases can be combined together and an ideal situation, relevant to several provincial milk control boards, can be theoretically analyzed. The next section attempts to perform this analysis.

Theory of the Multiplant Market-Discriminating Monopoly

Visualized as a multiplant, market-discriminating monopoly, the marketing board's major goal is to maximize the sector's aggregate net returns. If a marketing board has a given constituency of n farms, and controls the marketing of an agricultural commodity produced by its constituents and delivered to m markets, each of which is characterized by an independent demand schedule for a particular final product, the average revenue realized through the allocation of agricultural product to one specific market can be indicated by:

$$R_i = f_i(q_i) \qquad (5\text{-}20)$$

where:

R_i = the respective average revenue realized at the farm gate (f.o.b. price).

q_i = the quantity allocated by the board to the ith market, and

i = 1, 2, ---, k, K+1 ---, m markets, the first k being the domestic markets and the remaining m-k being export markets.

The function $f_i(q_i)$ is non-negative and $df_i/dq_i < 0$. The variable cost function of the farm under marketing board jurisdiction can be represented as a function of the quantity produced on that particular farm J. This is:

$$C_J = g_J(q_J^*) \tag{5-21}$$

where q_J^* represents the quantity produced by farm J and C_J represents the variable cost incurred by farm J in producing q_J^* with:

$J = 1, 2, ---, n$ farms and function $g_J(q_J^*) > 0$

(non-negativity condition) when $0 < q_J^* < \infty$. Differentiating g_J, the first derivative denoted by $MC_J(q_J^*)$ as a function of q_J^* where $d(MC_J)/q_J^* > 0$ (non-negativity condition) is obtained.

A marketing board, visualized as a multiplant, market-discriminating monopoly[1], follows three major rules of behavior, integrating the forms of monopoly situations presented in the preceding paragraphs. These rules of behavior are derived from the primary conditions for maximization of aggregate net return (Π) as:

$$\max \Pi = \max \sum_{i}^{m} f_i \ (q_i)q_i - \sum_{d}^{u} g_J(q_J^*) - \lambda \sum_{i}^{m} q_i - \sum_{J}^{n} q_J^* \tag{5-22}$$

---

[1] Such as provincial milk control boards with market sharing plans through marketing and production quotas, and various forms of pool pricing arrangements.

where λ represents a Langragian multiplier.[1]

Considering that provincial milk control boards follow price discrimination policy for different uses of milk, the first "rule" of behavior of marketing plans concerning the optimal allocation of products would require that the marginal revenue (MR) derived through one use equals the one derived through any other use. If there are m number of uses for the product, then:

$$P_1\left(1-\frac{1}{n_1}\right) = P_2\left(1-\frac{1}{n_2}\right) = ---P_i\left(1-\frac{1}{n_i}\right) = --- = P_m\left(1-\frac{1}{n_m}\right) \quad (5\text{-}23)$$

The board's second rule of behaviour, derived from the primary condition for maximum profit[2] (Π), concerns the optimal allocation of production efforts (inputs). This requires that the output levels of the operating farms, as members of the marketing board, are such that marginal cost in one farm equals marginal cost in any other farm.

---

[1] This formulation assumes that the total quantity produced equals the total quantity marketed, leaving no storage cost or carryover charges. This seems to be a valid assumption under the conditions of a strict coordination between the issuance of production and marketing quotas in accordance with the damand and supply situation.

[2] $$\max \Pi = \max \sum_{i}^{m} f_i(q_i)q_i - \sum_{J}^{n} q_J\left(q^*_J\right) - \sum_{i}^{m} q_i - \sum_{J}^{n} q^*_J$$

[3] Don Patinkin, "Multiple-plant Firms, Cartels and Imperfect Competition," *Quarterly Journal of Economics*, Vol. 61, No. 2(1947).

$$MC_1(q_1^*) = MC_2(q_2^*) = --- = MC_J(q_J^*) = MC_m(q_m^*) \qquad (5\text{-}24)$$

Finally, the board's third rule of behaviour concerning the level of production (within the context of supply management) would be to equate the marginal cost--indicated by the "least-cost" equation (5-24)--and the marginal revenue--indicated by the "most revenue" equation (5-23). This is

$$P_1\left(1-\frac{1}{n_i}\right) = MC_J(q_J^*) \qquad (5\text{-}25)$$

for all possible combinations of i and J(i = 1, 2, ---m; J = 1, 2, ---, n). Summarizing the above, equation (5-25) would indicate how a marketing board as a multi-plant, market-discriminating monopoly would proceed in allocating its products to different markets for various uses. Equation (5-24) implies that a board, before attempting to allocate the marketing quotas indirectly affecting the production levels, should first decide upon the pattern of benefit sharing among its constituent members. Equation (5-24) would provide a guideline for making this decision. Depending on the arrangement for benefit-sharing, equation (5-24) would determine the degree of ability or inability of the marketing board to maintain the third rule of behaviour expressed above.

Summary

Marketing Boards in Canada were established on a commodity basis with the main objective of maximizing farmers' aggregate net returns under legislatively authorized powers to manage the supply of regulated farm products through either marketing, delivery or production quotas. The need for marketing boards in Canada was accentuated because of the feeling that the existing price and income problems of the primary producers could not be solved without providing farmers with sufficient control over the supply of farm products (giving them countervailing power vis-a-vis the agribusiness sector).

Several theories have been propounded to explain the phenomenon of the increasing concentration in the agribusiness sector and some empirical evidence, as presented in the chapter, indicated a fair degree of concentration in the Canadian agribusiness industries. The degree level of concentration varied from one sector to another with Tobacco Manufacturers, Breakfast Cereals Manufacturers, Flour Mills and Biscuit Manufacturers having the highest concentration at the 12 interprises level.

Various theoretical models could be developed to explain how the operation of marketing boards increased the countervailing power of farmers and, especially, the various facets of price and quantity decisions undertaken by collective action of the farmers through the policies of the marketing boards. As a simple explanation, when the marketing boards reduced the supply of a product (supply management) through any of the three kinds of quotas, their action raised the price of the product which, with inelastic demand, increased the total farm income. This phenomenon can be further explained by the basic forces that operated behind the decisions of a monopolist. Marketing boards, with their different kinds of quota policies, represnted several situations relevant to a discriminating monopoly, a multiplant monopoly, a revenue maximizing monopoly, etc. An integration of these cases could be visualized as a marketing board being a multiplant (farms), market-discriminating monopoly with an economic objective of revenue maximization for the industry as a whole. This applied very well to the case of various provincial milk boards. For other marketing boards, the simple theoretical models explaining the price-quantity decisions and profit maximization behavior of a monopolist were relevant and were briefly exposed in the chapter.

CHAPTER VI

EVALUATION OF QUOTA POLICIES USED BY MARKETING BOARDS[1]

As indicated in Chapter III, marketing boards in Canada were organized on a commodity basis under legislative authority in an attempt to develop orderly marketing of regulated farm products. The regulated products accounted for more than one-third of the total value of products sold off Canadian farms. Each board was limited in its operations to specified products produced within the province or within specified areas of the province. These marketing boards varied widely in the types of programs they initiated. Since it was not possible here to make an evaluation of all the existing marketing boards in Canada, one main commodity--broiler chicken--was selected to represent boards with "marketing quotas". This choice was considered both necessary as well as sufficient for the purpose of the analysis.

In order to delimit the study further, selection of broiler chicken marketing boards operating in three provinces was made in the following sequence:

(1) The British Columbia Broiler Growers' Marketing Board

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[1] The chapter includes considerable information which was received in personal interviews and correspondence.

(2) The Alberta Broiler Growers' Marketing Board.

(3) The Ontario Broiler Chicken Producers' Marketing Board.

Using these marketing boards as case studies, it was possible to make some conclusions about the effects of quota policies used by the broiler marketing boards in Canada and to give suggestions for their improvement within the framework of the proposed National Broiler Marketing Agency.[1]

Broiler Chicken Producers' Marketing Boards

Preliminary Remarks: An Historical Account

The beginning of the broiler industry in Canada can be traced back to the late 1940's when the production of poultry meat was supplementary to the main farm enterprise. It provided an outlet for the utilization of excess farm labour and capital.

It was in the 1950's that the development of hybrid birds gave broiler production extensive recognition as an industry in its own right. This led to rapid expansion in the production of broilers across the country, causing the processing of broilers to increase substantially.[1]

---

[1] The National Agency for Eggs and Turkeys has already been established, and the agency for broilers has been proposed.

This development created a substantial productive capacity in the industry, and the problem confronting the processors became one of assuring a stable and adequate supply of broilers to minimize the processing costs associated with idle and/or underutilized plants. This posed a serious problem during the off-season when broilers were in short supply. Consequently during these

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[1] Growth in the Canadian broiler industry has been a result of rapid expansion in the production of broilers and a simultaneous expansion in processing facilities. The following table provides data on the dimensions of the poultry processing industry in Canada affecting the growth of the national broiler industry. Value of shipment of poultry products has increased continuously over the 1955-71 period.

POULTRY PROCESSORS

	1955	1961	1965	1967	1969	1971
Total Value Added ($ mill.)	21.0	25.1	34.0	42.8	56.3	62.7
Plant Numbers	191	169	150	125	111	104
Number of Employees	4610	5013	5987	6670	7210	7500
Value of Shipments ($ mill.)	142.1	152.4	192.5	234.3	283.1	299.5

Source: Dominion Bureau of Statistics, *Poultry Processors*, Cat. No. 32-227 (1966-71), and Financial Post, *Survey of Markets* (Toronto: Maclean-Hunter Ltd., 1955-71).

periods there emerged vigorous competition among processors for supplies.

Processors considered one approach to this problem would be to enter into contracts with growers through which they hoped to influence decisions regarding the type of bird, market weight and the total production. Moreover, it was considered that the stable supplies emerging out of these contracts would help to capture the cost economies associated with the fuller utilization of their plants.

Development of Vertical Integration[1]

Competition among processors for supplies, culminating in contractual arrangements between growers and processors, set the stage for development of vertical integration in the Canadian broiler industry. This development was consistent with processors' objectives of acquiring a greater measure of control over supplies and the marketing of broiler chickens. It assured processors of a stable and adequate supply of birds without their having to assume the risks associated with farm production. The concept of integration through contracts forced growers into a reappraisal of their role in an industry that had changed its characteristics and organization.[1] The buoyant consumer demand for broiler meat,[2]

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[1] Source: Canada Department of Agriculture, Poultry Division (Ottawa, unpublished information, 1971.)

---

[1] Figure 6-1 is incorporated to show the functional structure of the Canadian broiler industry with all vertical linkages.

[2] It may be noticed that there has been a continuous increase in per capita consumption of broiler meat in Canada. The following table gives the per capita disappearance of broiler meat in Canada and the ten provinces for the 1960-71 period.

Per Capita Consumption of Broiler Meat
(Canada[a] and Provinces[b], 1960-1971)

Year	Canada	B.C.	Alta.	Sask.	Man.	Ont.	Que.	PEI.	N.B.	N.S.
					(lbs.)					
1960	29.9	24.4	21.4	20.1	20.7	24.3	17.9	13.7	14.2	16.4
1961	23.2	27.2	24.2	17.9	22.2	27.1	20.4	15.2	16.4	18.7
1962	22.9	26.0	23.4	23.9	23.4	26.2	19.8	14.7	15.7	17.7
1963	23.8	26.6	24.2	26.6	22.7	27.2	20.7	15.3	16.3	18.1
1964	25.4	28.9	25.4	23.8	25.2	29.4	22.6	18.1	17.9	19.6
1965	26.7	30.8	27.1	27.1	26.1	30.4	23.7	19.6	19.2	20.8
1966	28.5	32.5	30.4	30.5	27.7	34.9	24.9	19.5	20.7	21.9
1967	30.0	33.2	31.4	28.8	30.6	33.2	27.0	21.1	22.3	24.1
1968	29.4	31.2	29.7	27.1	30.1	33.2	27.0	19.6	21.6	23.2
1969	32.4	33.0	32.6	29.2	32.4	36.6	29.8	21.5	24.1	26.5
1970	32.4	33.1	32.8	29.2	32.9	36.7	30.1	22.2	24.6	27.3
1971	33.6	33.7	32.9	29.5	33.1	37.9	31.2	23.1	25.1	27.5

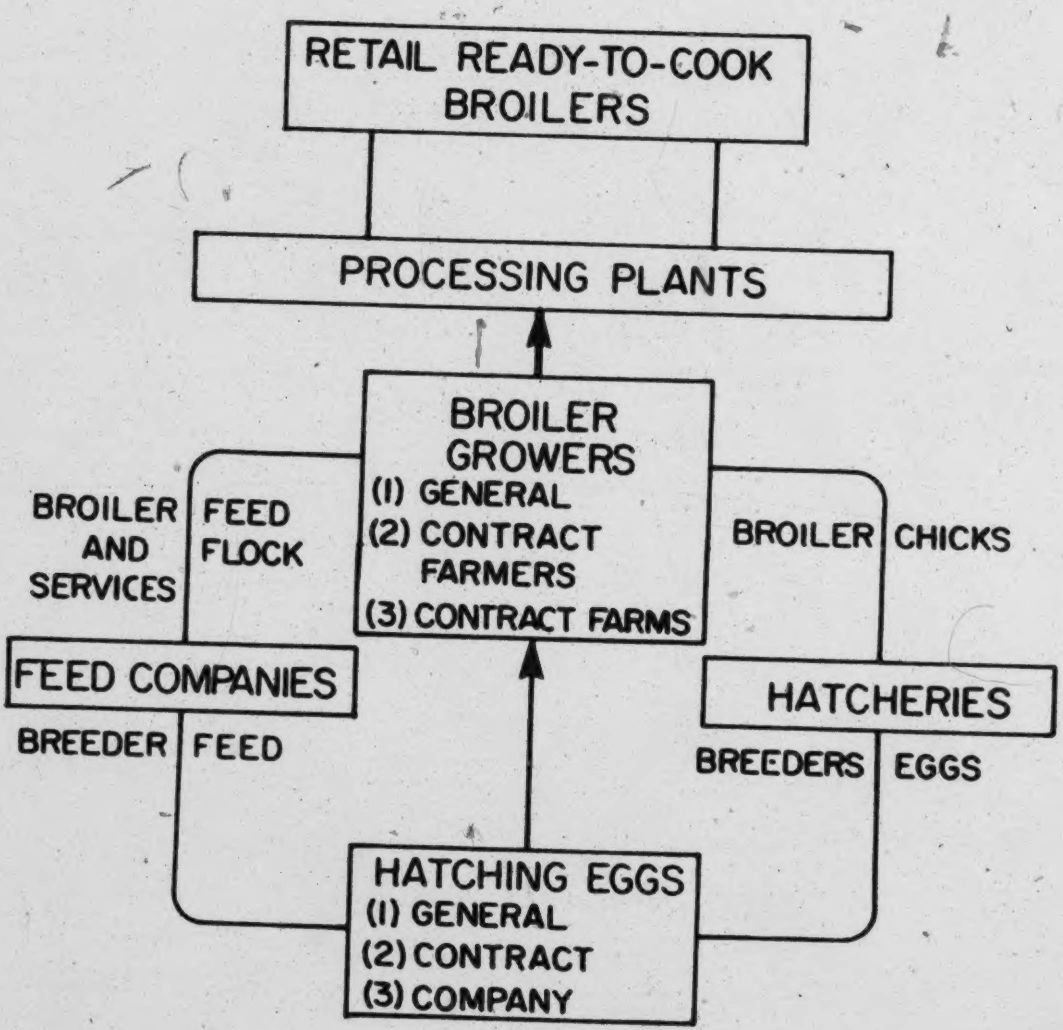
---

[a] National per capita disappearance of broiler meat from Canada Department of Agriculture, *Poultry Market Review* (Ottawa: Poultry Division and Marketing Information Section, annuals 1960-71); and Dominion Bureau of Statistics, *Apparent Per Capita Domestic Disappearance of Food in Canada, 1960-1971*, Cat. No. 32-226, Annual (Ottawa: Dominion Bureau of Statistics, 1960-71).

[b] Per Capita consumption of broiler meat for provinces estimated from the national figure using per capita income of provinces as proportional to the national per capita income for each year and the income elasticity coefficient of 1.0 for poultry meat as specified in M.L. Lerohl, *et al*, *The Benefits and Burdens of Feed Grain Transportation Policy* (Ottawa: Agricultural Economics Research Council of Canada, 1970).

FIGURE 6-1

FUNCTIONAL RELATIONSHIP OF CANADIAN BROILER INDUSTRY


RETAIL READY-TO-COOK BROILERS
PROCESSING PLANTS
BROILER GROWERS
(1) GENERAL
(2) CONTRACT FARMERS
(3) CONTRACT FARMS
BROILER AND SERVICES
FEED FLOCK
BROILER
CHICKS
FEED COMPANIES
HATCHERIES
BREEDER
FEED
BREEDERS
EGGS
HATCHING EGGS
(1) GENERAL
(2) CONTRACT
(3) COMPANY

rapid technological changes in farm production, processing, and vigorous competition within the industry exerted substantial pressures on the grower for expansion in the size of his broiler enterprise.

The directional changes ensuing in farm organization were characterized by optimism among growers which led them to become completely specialized in broiler production. This tended to make broiler production a dominant activity on a diversified farm operation.[1]

Another important reason that led farmers to integrate their operations vertically was due to the credit needs that increased with their measures to expand broiler production. The owners of hatcheries, feed manufacturers and processors were quite willing to provide the necessary credit if, in exchange, the growers entered into a contractual agreement with several processing and packing plants across Canada.

Another form in which vertical integration appeared was contract integration, in which contractual arrangements for inputs were made between a grower and a hatchery, a feed manufacturer and a processor. This was the most common form of vertical integration. From the point of view of the grower, these contracts introduced considerable rigidity in the production and marketing of broiler chickens. The contracts usually required the grower to market all his broiler chickens at one plant on a particular date at a contracted price, or he was required to buy all his chickens or feed from a particular firm. In return for these obligations, the grower was assured of adequate credit and advice on technical and managerial problems, thereby minimizing the risks and uncertainty associated with broiler production.

---

[1] The net positive effect of these organizational changes in the broiler industry were: (1) a substantial increase in the supply of broiler production at the farm level, (2) an aggressive sales promotion at the retail level, and (3) a significant decrease in production costs. It was vital for the economic survival of the individual farm unit to capitalize on the cost economies that were associated with the greater volume of business at that time. Moreover, growers seemed to believe that expansion would facilitate their gaining a greater measure of market control than they apparently had at that time.

Vertical Integration and Market Control

One aspect of the integration problem which seems to have received little attention is that dealing with market control. Integration is essentially a market phenomenon, especially with respect to broiler chicken. This stems from the fact that the largest gains in marketing efficiency are from organizational innovations not marketing technology. Achieving such organizational innovations invariably involves some degree of market control.

Interpreting the main motive involved in obtainig market power, integrators want to obtain independence from the free market and the dominant reason for this is to obtain an increase in profits. This aspect of obtaining an increased profit can be illustrated by a theoretical model presented by Vernon and Graham.[1] This is attempted in the next section.

A Theoretical Model Indicating Profitability of Monopolization by Vertical Integration

The generally accepted hypothesis that the merger policy of a monopolist is not based on a profit incentive for integrating into a competitive sector unless there are cost savings to be gained is valid if the isoquant of the integrator is of the fixed-proportion type.[2] However, the assumption of a fixed proportion isoquant overlooks an important source of monopoly profits generated through vertical integration. An alternative, in which the isoquant is of the variable proportion type, presents a more realistic situation and the vertical merger (e.g., feed manufacturers, hatcheries, etc., integrating into the broiler chicken production) permits the integrated firm to achieve efficiency in factor utilization and therefore capture additional profits.

This conclusion is depicted in Figure 6-2. Representing the entire industry by isoquant X*, the ratio of monopoly price A to the price of B is given

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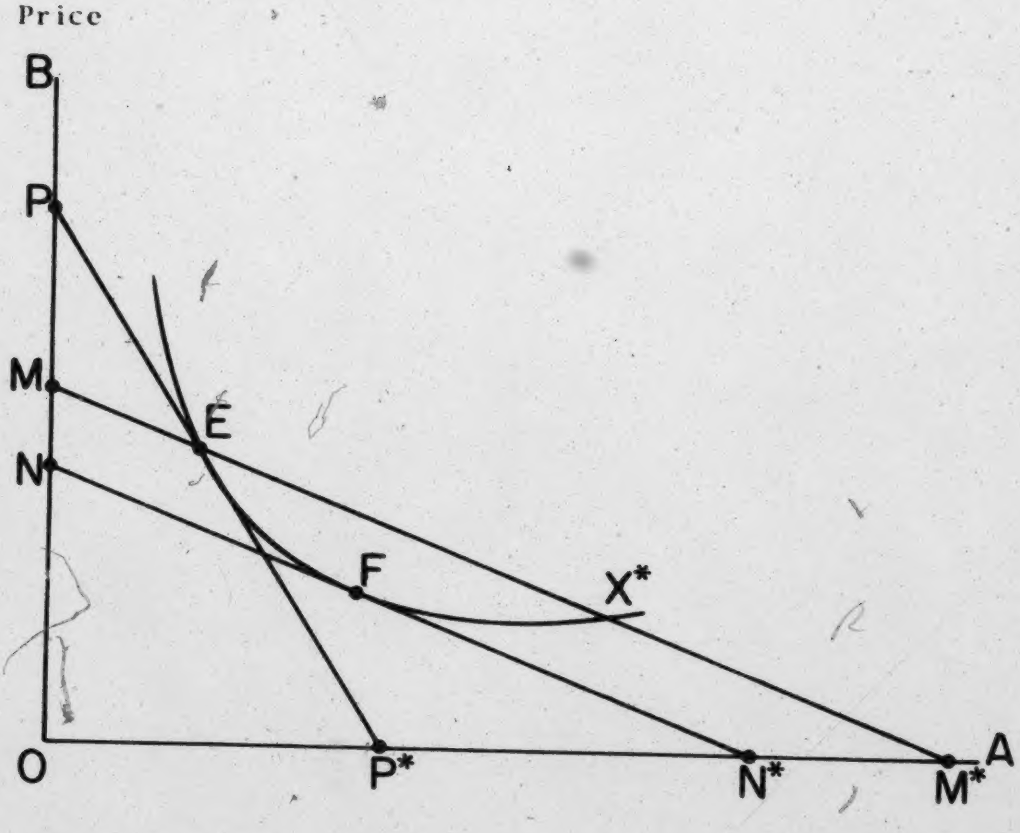
[1] J. M. Vernon and D. A. Graham, "Profitability of Monopolization by Vertical Integration," *Journal of Political Economy,* Vol. 79, Part 2 (1971).

[2] M. L. Berstein, "A Theory of Full-line Forcing," *Northwestern University Law Review,* Vol. 55, No. 1 (1960).

FIGURE 6-2

A THEORETICAL MODEL INDICATING PROFITABILITY OF MONOPOLIZATION BY VERTICAL INTEGRATION


Price
B
P
M
E
N
F
X*
O
P*
N*
M*
A

by the slope of PP*. The ratio of the marginal cost of A to the price of B is given by MM* (NN* is parallel to MM*). Measuring in units of B, the monopolist's pre-merger profit is PM. After merging and shifting production from point E to point F, the integrated firm could increase its profits by at least MN.[1]

Despite this profit and certainty factor implicit in the monopolization by vertical integration, broiler chicken growers in Canada opted for "supply management" as the second best technique to generate the required countervailing power. There were several reasons for the preference of this technique for supply management. Farmers in general were jealous of their independence and wanted to maintain their right to make their own decisions and control their own business. With all its positive effects, vertical integration generated circumstances leading to the corporate take over of farmers' broiler chicken growing operations by hatcheries and feed manufacturers, which was not politically acceptable to the farmers. The situation became severe in the broiler chicken industry in the early Sixties throughout Canada and it appeared that farmers faced the extinction of their independent status.[1] Therefore, they turned to provincial marketing legislation for the use of supply management through the broiler chicken marketing boards in order to maintain their position.

---

[1] Several sources of economic efficiency in vertical integration can be recognized. First, it tends to promote efficiency by coordinating each phase of the overall business. Second, it reduces certain costs by eliminating many agents and brokers. Third, it gives the grower stability and fourth, integration brings capital together where it is needed.

Vertical integration in broiler production, being an efficient means of production, was expected to increase the production of birds to an extent where it would be difficult to find effective market outlets.[2]

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[1] Besides, insofar as the individual farm unit was concerned, vertical integration imposed restraints on individual choice and freedom of decision making and forced the grower into rigid contractual arrangements with the integrator, whereby his responsibility for the management decisions regarding his flock virtually diminished to zero.

[2] The following table gives the supply and demand situation of broiler meat for Canada during 1961-1971. Though the domestic disappearance increased over this period, the surplus balance worsened the price situation. A surplus position continued even after 1966-67 (the year when several provinces started marketing plans) because some provinces like Quebec continued producing without any supply management. Under the integrated system, broiler production in Quebec increased by over 50 percent during 1966-71 and, with the increased numbers of integrated operations and with large sources of financial backing, it took very drastic and often prolonged periods of depressed price to have any effect on supply.

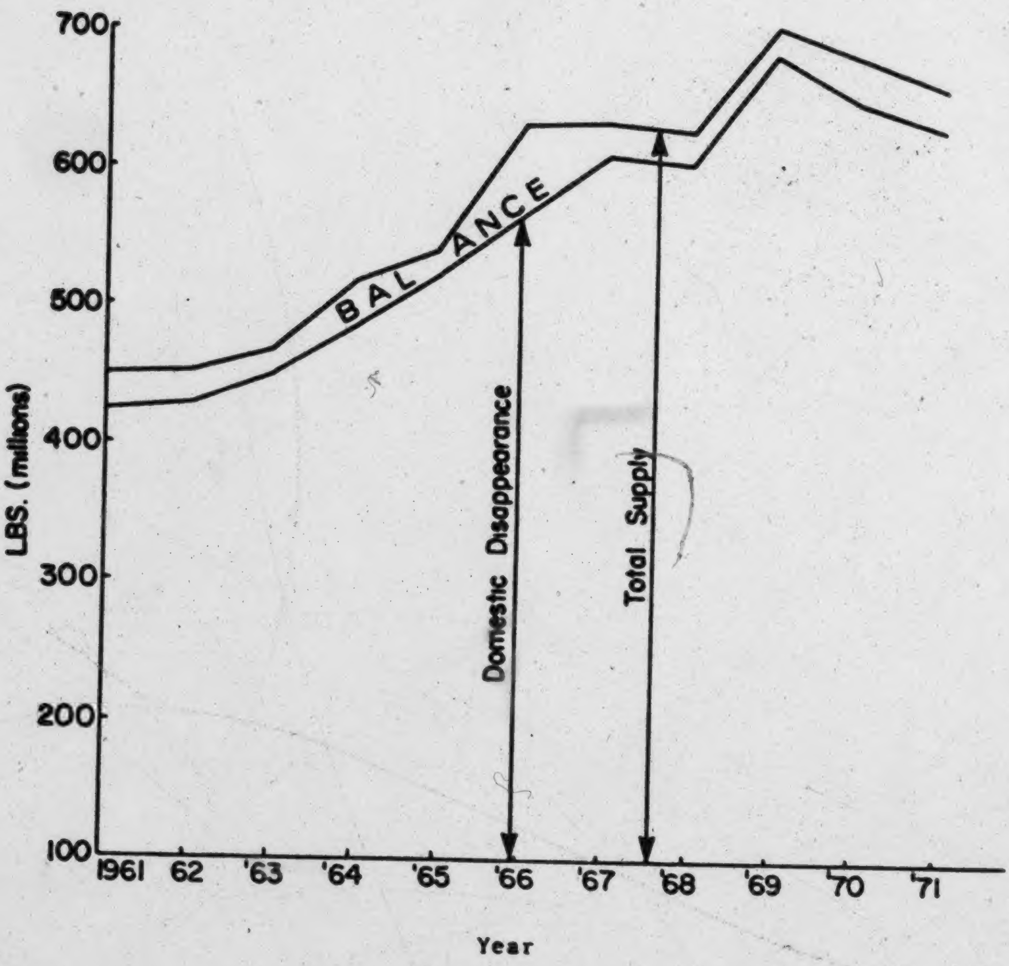
SUPPLY AND DEMAND SITUATION OF BROILER MEAT, CANADA, 1961-71

Year	Stocks at Jan 1st	Prod.	Imports	Total Supply	Domestic Use	Balance
			(million lbs.)			
1961	14.8	416.3	14.8	446.0	423.1	+22.9
1963	10.5	453.4	5.9	469.8	450.5	+19.3
1965	18.8	515.1	7.8	541.9	524.4	+17.4
1967	24.3	601.3	10.3	636.0	612.1	+23.8
1969	19.2	684.7	5.2	709.2	682.3	+26.8
1971	30.4	629.1	1.2	660.7	633.0	+27.7

Figure 6-3 depicts total supply and consumption of broiler meat in Canada, 1961-71.

FIGURE 6-3

TOTAL SUPPLY AND DOMESTIC DISAPPEARANCE OF BROILER MEAT, CANADA, 1961-71



This was expected to generate price and income problems in the broiler chicken industry, causing the storage stocks to expand which could exert a substantial burden on the industry unless government subsidized the export of live or eviscerated birds. Farmers thought that these problems generated by vertical integration could be solved with the tool of supply management implemented through the provincial marketing boards. Consequently, various provinces began establishing marketing boards.

Impact of Broiler Marketing Boards on Relative Market Shares

The first broiler chicken marketing board was established in the Province of British Columbia (December, 1961). Since then, similar marketing boards have been established in other provinces;[1] each changed the relative market position of each province. Table 6-1 indicated that, in 1960, Ontario surpassed Quebec in total broiler marketing (47.6 percent of the total Canadian broiler chicken production was in Ontario as compared to 32.0 percent in Quebec in 1970). After the establishment of the Broiler Chicken Marketing Board in Ontario in 1965, the relative market share decreased to 34.3 percent while,

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[1] In sequence, the establishment of broiler marketing boards followed this pattern: British Columbia, December, 1961; Ontario, April, 1965; Nova Scotia, 1966; Saskatchewan, June, 1966; Alberta, September, 1966; Manitoba, June, 1968; and Quebec, 1971. Though the board existed in Quebec since 1964, there was no provision for the use of supply management in the broiler industry.

Table 6-1

RELATIVE MARKET SHARE OF BROILER PRODUCTION BY PROVINCE, 1960 & 1970

Province	Relative Market Share	
	1960	1970
	(Percent)	
Ontario	47.6	34.3
Quebec	32.0	40.6
New Brunswick	1.1	2.6
Nova Scotia	3.2	2.9
Prince Edward Island	*	*
Alberta	4.5	5.9
Saskatchewan	*	*
Manitoba	2.3	4.3
British Columbia	8.7	7.1

* Less than 1 percent.

Canada Department of Agriculture, *Poultry Market Review* (Ottawa: CDA, 1960 and 1970). (Estimates.)

in Quebec, where no supply management was practiced, the market share improved to 40.6 percent. Of the 151.0 million lbs. increase in broiler marketing in Quebec during 1960-71 period, about 73.0 percent occurred during the years 1965-70. Table 6-2 illustrates the changes between 1960 and 1970.

During the latter half of the 1960's when Quebec's broiler producers increased production in order to gain a larger share of the Ontario market, capital expansion loans at low interest rates were readily available from the Quebec Government. In addition, by making use of vertical integration techniques developed in the United States, production costs were lowered. Quebec made sizeable inroads into the Ontario market. At times, excess broilers from Quebec were sold in distant markets at prices reduced by as much as 3 cents per pound below local market prices.

During the period 1960-70, all other provinces achieved larger percentage increases than Ontario. Broiler marketings in Saskatchewan, Manitoba and New Brunswick increased steadily from a relatively low level in 1960 but the absolute increase was not important in relation to Quebec and Ontario production (Table 6-2). However, from Table 6-1 it is evident that Quebec, Ontario, British Columbia and Alberta had been the major broiler chicken producers during the 1960-70 period. Since Quebec had no

Table 6-2

RANK, VOLUME AND PERCENTAGE CHANGE IN BROILER MARKETING BY PROVINCE,

1960 & 1970

Province	Marketing (Eviscerated Weight Basis)		% Change
	1960 (Rank)	1970 (Rank)	1960-70
	('000 lbs.)	('000 lbs.)	
Ontario	87,923 (1)	189,495 (2)	115.5
Quebec	59,192 (2)	224,709 (1)	279.6
British Columbia	16,126 (3)	39,369 (3)	196.9
Alberta	8,239 (4)	32,348 (4)	292.6
Nova Scotia	5,928 (5)	15,967 (6)	169.3
Manitoba	4.223 (6)	23,784 (5)	463.2
New Brunswick	2,002 (7)	14,170 (7)	607.8
Saskatchewan	1,056 (8)	12,955 (8)	1126.8
Prince Edward Island	131 (9)	386 (9)	194.7
CANADA	184,820	553,183	199.3

Source: Canada Department of Agriculture, *Poultry Market Review* (Ottawa: CDA 1960 to 1970). (Estimates.)

supply management program, it was not possible to analyze the impact of quota policies on the selected variables. However, Quebec broiler chicken is useful to the analysis on a comparative basis.

Analysis of Supply and Demand

Effective short-run supply management requires the knowledge of price-quantity relationships and specifically, the knowledge of short-run supply and demand elasticities with respect to important economic variables. It was therefore considered important to develop an economic model specifying the variables that might explain the supply and demand structure of the Canadian broiler industry and to test the behaviour of the parameters through econometric analysis. Identification of the variables that explained the supply and demand structure of the Canadian broiler industry was considered relevant for guiding the various broiler marketing boards in making their quotas and pricing policies more effective.

The traditional procedure used in structural analysis of supply and demand is to estimate parameters of supply and demand equations through alternative regression techniques applied to time-series data. Single equation, least square method gave the best results under the assumptions that: (a) the data were accurate, (b) the model used was a good approximation of the "real world" conditions, (c) the behavior patterns of producers and consumers were stable, and (d) statistical estimation procedures were appropriate. Based on these assumptions, the estimates could be used for prediction purposes as well.

Specification of the Economic Model: Theoretical Considerations Applicable to Broiler Chicken Production

Supply Side--The average revenue that an individual broiler chicken producer can realize through the sale of broilers produced can be indicated by:

$$R_j = f_j(Q_j) \text{ with } \partial R_j/\partial Q_j \leq 0 \qquad (6\text{-}1)$$

and $f_j(Q_j) \geq 0$ where R_j = average revenue and Q_j = quantity produced by the producer j.

On the cost side the variable cost as a function of output at a particular farm is:

$$C_j = g_j(q_j^*) \qquad (6\text{-}2)$$

where q_j^* = quantity produced, C_j = the variable cost and j = 1, 2, 3, ..., n farms with a constraint $g_j(q_j^*) > 0$ and $0 < q_j^* < \infty$.

The marginal cost $MC_j(q_j^*)$ is:

$$\partial(MC_j)/\partial q_j^* > 0$$

Now, each broiler producer's rules of behaviour will be determined by:

$$\mathrm{Max}\Pi = \mathrm{Max} \sum_{i=1}^{m} f_1(q_j)q_j - \sum_{j}^{n} g_i(q_i) - \lambda \left(\sum_{i=1}^{m} q_i - \sum_{j=1}^{n} q_j^{*} \right) \quad (6\text{-}3)$$

where Π is the aggregate net return and λ is a Langragian multiplier, assuming that the total quantity produced equals the total quantity marketed. Considering the objective of maximizing net return, broiler producers make decisions that affect the total supplies produced which theoretically correspond to the rising portion of their individual marginal cost schedules.

Demand Side--In a theoretical framework, a demand relationship obtained as a result of maximizing consumer's satisfaction subject to a budget constraint is expressed as a function of prices and income on the quantity consumed, but in most cases it seems important to isolate the effects of non-economic variables such as psychological, sociological, cultural and regional factors that determine the level of demand for a given commodity. Unfortunately, it is often difficult or even impossible to quantify the effects of many noneconomic factors. The static theory of demand, however, depends on certain basic principles that refer to utility-maximizing individuals.

If p_1, p_2, ..., p_n represents the unit price of commodities and total expenditures equal $p_1q_1 + p_2q_2$ subject to:

$$p_1q_1 + p_2q_2 + \ldots + p_nq_n \leq y,$$

the consumer's choice of $q_1, q_2, \ldots, q_n$ will be determined via:

$U(q_1, q_2, \ldots, q_n) + (Y - p_1q_1 - \ldots - p_nq_n)$ and, therefore,

$$U_j(q_1, q_2, \ldots, q_n) - p_j = 0 \qquad (6\text{-}4)$$

$$(j = 1, 2, \ldots, n)$$

$$Y - p_1q_1 - p_2q_2 - \ldots - p_nq_n = 0 \qquad (6\text{-}5)$$

where $U_j = \frac{\partial U}{\partial q_j} > 0$.

Thus we have $(N + 1)$ equations in $(N + 1)$ variables $(q_1, q_2, \ldots, q_n)$ and Y and we can solve for the quantities that provide the individual with the highest possible level on his preference scale. Therefore the solution is:

$$q_j = q_j(p_1, p_2, \ldots, p_n, Y) \qquad (6\text{-}6)$$

$$j = (1, 2, \ldots, n)$$

The quantity purchased of each commodity is expressed as a function of its price, the price of other commodities, and income, representing a set of demand functions.

Outline of the Economic Model

Characteristics of Supply Structure for Broilers--The quantity of broilers produced was expected to be associated directly with the factors that affected the raising of broilers. The structure of broiler supply was considered simple because:

(a) The broiler enterprise was a single product enterprise;

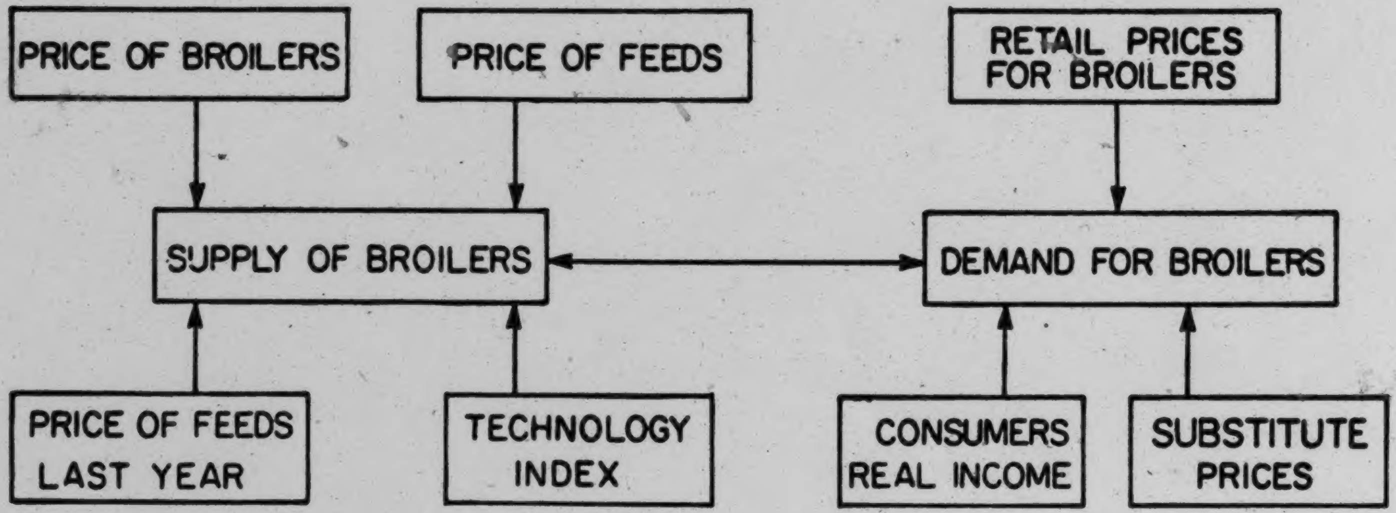
(b) The period of broiler production was relatively short.

In the broiler sector, farmers made only one decision, the number of broilers to raise, and once these broilers were raised, farmers could do little to adjust output. Only the weight could be increased or decreased according to market conditions.

On the supply side, total broiler output could be predicted largely from the factors that affected decisions on the number of broilers to be raised. The structural relationships of supply and demand in the broiler industry are expressed in Figure 6-4.

FIGURE 6-4

SUPPLY AND DEMAND STRUCTURE OF BROILERS


PRICE OF BROILERS
PRICE OF FEEDS
RETAIL PRICES FOR BROILERS
SUPPLY OF BROILERS
DEMAND FOR BROILERS
PRICE OF FEEDS LAST YEAR
TECHNOLOGY INDEX
CONSUMERS REAL INCOME
SUBSTITUTE PRICES

The Economic Model (Supply)

Based on Figure 6-4 factors[1] affecting broiler production were identified as:

$$S_r^b = f\left[\left(\frac{P_r^b}{P_d^f}\right), \left(\frac{P_r^b}{P_{d_{t-1}}^f}\right), T_r^b\right] , \qquad (6\text{-}7)$$

where:

S_r^b = supply of broilers,

P_r^b = price of broilers,

P_d^f = price of feeds,

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[1] In equation (6-7), supply of broilers was expected to be associated directly with the factors that affected the raising of broilers. Quota allotments were ignored in the sense that individual broiler production decisions could still be explained by variables identified in the economic model within a given quota system. Raising of broilers was considered to be affected by decisions such as price of broilers P_r^b, price of feeds P_d^f, price of feed last year $P_{d_{t-1}}^f$, and technology index of broiler production T_r^b. Egg profitability index lag (E_{t-1}^e) could be used in general, but with specific reference to broiler and egg production as distinctly separate operations, it was considered irrelevant in this model. Broilers and egg marketing boards operated separately in several provinces and the Central Egg Marketing Agency and the proposed Broiler Agency (both at the national level) are considered distinctly separate entities. Quantity and pricing decisions in the Canadian broiler and egg sectors are made under different considerations as the variables explaining the structural characteristics of the Canadian egg sector are different from the broiler sector.

$P^f_{d_{t-1}}$ = price of feeds last year,

T^b_r = technology index of broiler production (feed conversion ratio).

For estimation purposes this was expressed (single equation, least square model) as:

$$\log S^b_r = \log a_0 + a_1 \log \left(\frac{P^b_r}{P^f_d} \right) + a_2 \log \left(\frac{P^b_r}{P^f_{d_{t-1}}} \right) + a_3 \log T^b_r + U \qquad (6\text{-}8)$$

The estimate of domestic broiler production, with inclusion of trade balance, would give the total available domestic supply.

Characteristics of Demand Structure for Broilers

The determinants of demand were numerous but the most important factors were identified as follows:

(i) Tastes and preferences,

(ii) Prices of chicken broilers,

(iii) Consumers' real income,

(iv) Prices of substitutes,

(v) Number of consumers in market place,

(vi) Availability of substitutes.

The Economic Model (Demand)

However, for our purposes, the following functional relationship existed in the Canadian broiler industry:

$$P_r^b = f\left(C_r^b,\ Y_b^r,\ S_r^b,\ P_s^r\right) \tag{6-9}$$

where:

C_r^b = Per capita consumption of broilers,

P_r^b = Retail prices of broilers,

Y_b^r = Consumers' real income,

S_r^b = Supply of broilers,

P_s^r = Prices of substitutes.

For empirical purposes, the functional model could be written as:

$$\text{Log } P_r^b = \log a_0 + a_1 \log c_r^b + a_2 \log Y_b^r + a_3 \log S_r^b + a_4 \log P_s^r + U \tag{6-10}$$

Summary of Supply Estimates

The results of estimation of both single-step linear and single-step logarithmic equations were obtained for broiler supply and demand structure through the ordinary least squares method. The logarithmic form yielded results that are reported as follows:

$$\text{Log } S_r^b = -15.187 + \underset{(0.1320)}{0.8721} \log\left(\frac{P_r^b}{P_d^f}\right) + \underset{(0.1672)}{0.3102} \log\left(\frac{P_r^b}{P_d^f}\right)_{t-1} + \underset{(0.8731)}{8.7314} \log T_r^b$$

$$R^2 = 0.9131$$

In this form, supply of broilers showed a positive relationship with broiler prices and feed price ratio. The coefficient of log $\frac{P_r^b}{P_d^f}$ had a positive value, greater than the coefficient of $\frac{P_r^b}{P_{d_{t-1}}^f}$, though the latter coefficient also had positive value.

This implies that broiler production was more responsive to current year prices than to past year prices. The coefficient of log T_r^b had a large positive value and was also highly significant, implying that technological progress in broiler production stimulated growth in the broiler industry. Besides the findings of these econometric results, consumer demand and use of broiler meat as a substitute for other meat products may be considered as additional factors indirectly responsible for increase in broiler production.

Summary of Demand Estimates

Similarly, coefficients of variables in demand function (6-9) were estimated by the single-step linear and single-step logarithmic equations. The following values of the coefficients were obtained:

$$\text{Log } P_r^b = 7.2130 + \underset{(0.1337)}{0.3521} \log C_r^b - \underset{(0.9128)}{2.3170}\, Y_b^r + \underset{(0.6213)}{0.7132} \log P_s^r$$

$$R^2 = 0.8134$$

The signs of coefficients of the variables in the demand equation were consistent with theory of demand. The positive value of intercept (+7.2130) conformed to economic logic. Similarly, the value of coefficients of log C_r^b and P_s^r were consistent with theory and also significant, even at the 95.0 percent level. The negative sign of the coefficient of Y_b^r indicated that the demand for broilers were found as negatively related to per capita income of the consumer. This conclusion was difficult to establish as it related to prices and supplies of other red meats, pork and the overall attitude of consumers in different income groups towards broiler meat. Broiler promotional activities as adopted by various broiler marketing boards during 1961-70 period could also be a factor in changing the results indicated by the coefficient Y_b^r.[1]

General Analysis of the Operation of Provincial Broiler Marketing Boards in Canada

With this econometric analysis of the supply and demand structure of the Canadian broiler industry, it seems advisable to first analyze the operational details of the existing broiler marketing boards in Canada before proceeding with the specific evaluation of the selected three provincial marketing boards in British Columbia, Alberta and Ontario. During the period included in this evaluation, all but three provinces, i.e., Quebec, Prince Edward Island and Newfoundland, had broiler marketing boards with quota policies.[1] Table 6-3 provides a detailed analysis of various aspects of broiler marketing boards and its use here is to present a general comparative analysis of the various facets of marketing broiler chicken in Canada.

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[1] Most of the provincial broiler marketing boards have been spending thousands of dollars on broiler promotional activities which have appeared to have generated a substantial improvement in chicken broiler consumption during the past decade.

Levels of Control

In all eight provinces as indicated in Table 6-3, marketing boards had control at different levels of broiler production and marketing. In three provinces--British Columbia, New Brunswick and Nova Scotia--the provincial broiler boards had control at all levels--hatcheries, producers, wholesalers (processors) and retailers.

For hatcheries, provision was made for fixing the maximum price that hatcheries could charge for broiler chicks sold to the growers. For producers, the most efficient control is with regard to marketing quotas and

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[1] Recently, in 1972, Quebec also started a supply management program and Newfoundland established a broiler marketing board on a pattern similar to the one operating in Nova Scotia. Prince Edward Island has a plan but has not yet fully implemented it.

Table 6-3
COMPARATIVE STATUS OF BROILER CHICKEN PROVINCIAL MARKETING BOARDS IN CANADA
Administrative, Operational and Policy Aspects, 1972

Provinces Headings	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.
1. Year Act assented to	1948	1955	1965	1964	1965	1964	1952	1954
2. Year Regulations were proclaimed	1961	1966	1966	1968 & 1971	1965	1971	1967	1966
3. Number of Board members	3	3	5	5	9	11	7	6
(a) number of members required for quorum	2	3	3	majority	5	-	5	4
4. Control - Level								
(a) Hatcheries	Yes	Yes	No	No	No	No	Yes	Yes
(b) Producers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(c) Wholesalers (Processors)	Yes	Yes	On price only	No	Yes	No	Yes	Yes
(d) Retailers	Yes	No	No	No	No	No	Yes	Yes
5. Flock Size (Number of Head)								
(a) Minimum	Any quantity	2,000	1,000/year	1,000	None	None	2,000	None
(b) Maximum	3% of primary quota or 87,000 head	No (7)	40,000/crop	30,000(12)	150,000	75,000	Board Discretion	40,000/3 mths(12)
6. Levy (Normal)								
(a) cents per lb. live weight	N/A	1/5¢	1/4¢	1/8¢	1/10¢	1/8¢	1/8¢	1/5¢(17)
(b) cents per bird	3/4¢ per bird	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(c) over quota surpluses	(1)	No	5¢/bird	No	No	No	Penalty or Suspension	(1)
(d) from other provinces	No	No	No	No	No	No	1/8¢/lb. live	1/5¢/lb. live
(e) Are non-licensed producers paying a levy	N/A All producers licensed	No	No	Yes (13)	No	Yes 1/8¢	N/A	N/A
7. Licence Fees (Amount & Yearly)								
(a) Hatcheries	$5.00	No	No	No	No	No	No	No
(b) Producers	$1.00	Levy only	$1.00	No	No	No	Yes	No
(c) Wholesalers - Processors	$15.00	No	$25.00	No	No	No	No	No
(d) Retailers	No fee	No	No	No	No	No	No	No
(e) Expiry date	Dec. 31	Nil	Dec. 31	Dec. 31	Dec. 31	-	Dec. 31	-
(f) Caterers	No fee	-	-	-	-	-	-	-
(g) Peddlers (Hucksters)	$1.00	-	-	-	-	-	-	-
(h) Warehouses	No fee	-	-	-	-	-	-	-
(i) Truckers	$1.00 per year per truck	-	-	-	-	-	-	-
8. Price Setting (What Level)								
(a) Live to producers or	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
eviscerated to producers	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(b) Minimum to growers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
i) f.o.b. farm ungraded or	Yes (2)	No	No	Yes	Yes	Yes	-	-
ii) f.o.b. plant graded	N/A	Yes (8)	Yes	No	No	No	f.o.b.plant lv.wt.	f.o.b.plant lv.wt.
(c) Minimum paid by								
i) producers to hatcheries	Yes (3)	No	No	No	No	No	No	No
ii) wholesalers to processors	Yes (3)	No	No	Yes (14)	No	No	No	No
iii) Retailers to Processors or wholesalers	Yes	No	No	Yes (14)	No	No	No	No
(d) Are prices set weekly	Yes	No	No	No	Yes	Yes	No	No
(e) Price setting committee	No	Board	Yes	Board	Total Board	Yes	Yes	Yes
i) number	N/A	8	6	5	9	7	9	7
ii) membership (make-up of the committee	N/A	2-E&P.A. 1-A.H.A. 1-A.F.M.A. 1-A.H.A. 1-A.F.M.A. 3-B.G.A. 1-A.H.E.P.A.	2 processors 1 feed man 1 hatchery 1 feed man 1 hatchery 2 broiler Bd. members	-	-	3 Board Mbs. 3 Processors 1 Regie	4 Board Mbs. 4 Processors 1 Independent 4 Processors 1 Independent Chairman	3 Board Mbs. 3 Processors 1 Independent 3 Processors 1 Independent Chairman
(f) Is there a conciliation agency	Yes	-	Yes	No (15)	No	Yes	Yes (16)	Yes (18)
i) make-up of the Agency	2 growers (1 board member) 2 processors 1 Independent Chairman	-	-	-	-	-	-	-

9. Quota (Producer)								
(a) Annual - Issuing date	N/A	N/A	N/A	N/A		Yes	Yes	Every 3 months
(b) Monthly - or weekly	Weekly		Mthly or Qtrly	N/A		-	-	-
(c) i) Primary Quota (all broilers)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ii) Secondary Quota	Yes	Permits only	Permits	Yes	Yes	No	-	No
iii) Roaster Quota	Yes	Permits	Permits	Yes	Yes	Yes	No	No
iv) Rock Cornish Quota	(4)	Permits	Permits	Yes	Yes	No	-	No
(d) Is Quota transferable	Yes	Yes (19)	Yes (12)		No	Yes	No	Yes (19)
(i) Leased	Primary quota for 1 cycle only	No	Yes	No	Yes	No	Yes	No
(e) Is quota monetary value	No (5)	No	No	No	Theoretically Yes	Yes	Minimal transfer fee	Yes
(f) Quota remains property of the Board	Yes	Yes	Yes (10)	Yes	No	No	Yes	No
(g) How quota increased to producers	Equally to individual producers	35% to new producer	Application	Application		Equally to individual producer	Bd. discretion	Transfers & new issues
(h) Number of crop per year								
i) Broilers	11 wk. cycle	10 wk. cycle	4 crops	4 1/3 crops	4 1/3 crops	4 crops	4 1/2 crops	4 crops
ii) Roasters	16 wk. cycle	3 crops	1 crop (11)	3 1/2 crops	2 crops	3 crops		
iii) Rock Cornish	11&10 wk. cycle (6)	Permit only	1 crop (11)	[illegible] crops	9 crops	4 crops	Juniors 5 3/4	Juniors 4
(i) If possible, number of producers								
i. Under quota with % of total volume (head)	125-100%		80-75%	125-87%	669-100%	1465-100%	32-100%	53-100%
ii. Not under quota with % of total volume (head)	nil		2500-25%	13%	nil	nil	N/A	nil
10. Is seizure clause provided	Yes	No (9)	Yes	No	Yes	-		Yes
11. Statistics								
(a) Have they got a clause for statistics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(b) Are statistics gathered on non-licensed producers	N/A	No	No	Yes	No	No	No	No
(c) On over-quota	Yes	Yes	Yes	Yes	No	Yes	-	Yes
(d) On product from other provinces								
i) brought in or	Yes	Yes	Processor Level Only	Yes	No	Yes	Yes	Yes
ii) shipped out	Yes	Yes	Processor Level Only	Yes	No	No	No	No
12. Broiler Surpluses								
(a) Pooling agency	No	No	No	Yes	No	No	No	No
(b) Removal surplus program	No	No	Yes-when required	No	No	No	No	Yes

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(1) Number of heads over quota, deducted from next cycle.
(2) Roasters are F.O.B. farm graded.
(3) Also have authority to set minimum.
(4) Re Rock Cornish: Permits are offered to broiler and roaster quota or permit holders, as product is needed.
(5) Market is reported to have acquired a value of $1.25 per bird.
(6) When permits issued they are on same cycle as growers' broiler or roaster quotas.
(7) Intend to have a maximum in the near future.
(8) No. 1 and No. 2 live.
(9) In the Act and can apply for it.
(10) Yes, when not sold or leased by permission of Board.
(11) Subject to change during 1973.
(12) No maximum for those prior to these regulations, but maximum since establishment of plan.
(13) 1/8¢/lb. live weight, but may apply for refund.
(14) Yes - but not used.
(15) No - but there is a negotiation committee.
(16) New Brunswick Natural Products Control Board.
(17) Condemnations adjusted.
(18) Recourse to Natural Products Control Board.
(19) Yes - subject to Board approval.

minimum producer prices for liveweight broilers.[1] The minimum prices fixed by the broiler boards for producers generated a relevant control on wholesalers in addition to a direct control on production. Beside this, wholesalers also had certain regulations as set by the broiler boards with regard to importing broilers from outside the province. Controls were exercised by the boards in the form of issuing permits (secondary quotas) if the boards thought broiler imports into the province were not interfering with the production and marketing of broilers within the province. A similar control was meant for the retailers, especially in provinces where retailers' imports from other provinces interfered with the domestic market.

Flock Size Limits

In each province, control over chicken broiler producers varied with regard to flock size. Most of the provinces placed minimum and maximum limits on bird flock size, ranging from no minimum limit but a maximum of 3 percent of the total primary quota, or 87,000 head, per cycle in British Columbia; Alberta, minimum 2,000 birds; Saskatchewan, minimum 1,000 birds per year and maximum 40,000 per crop; Manitoba, minimum 1,000 birds and maxi mum 30,000; Ontario, no minimum and maximum 150,000; Quebec, no minimum and maximum 75,000; New Brunswick, minimum 2,000 and maximum open to the board's discretion; and in Nova Scotia, no minimum but maximum fixed at 40,000 per three-month period

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[1] Recently, in 1973, Quebec also started a supply management program and Newfoundland established a broiler marketing board on a pattern similar to the one operating in Nova Scotia. Prince Edward Island has a plan but has not yet fully implemented it.

Boards, Levies, Licence Fees and Over-Quota Surplus Charges

The amount of board levies varied from province to province. In all provinces, except British Columbia,[1] the board levies were on a liveweight basis (cents per lb.) as follows:

> Alberta--1/5¢; Saskatchewan--1/4¢; Manitoba--1/8¢; Ontario--1/10¢; New Brunswick--1/8¢; Nova Scotia--1/5¢ (after condemnation insurance payments are adjusted).

Beside the board levies on production levels, there were licence fees that hatcheries, producers, wholesalers (processors) and retailers paid to the marketing board. None of the provinces, except British Columbia, had any licence fee charged to hatcheries. In British Columbia, hatcheries paid $5.00 per year for registration. Beside board levies, some provinces (British Columbia, Saskatchewan, and New Brunswick) had a licence fee.

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[1] In British Columbia, board's levy was on live-birds and not on weight (0.75¢ per bird).

Four out of the eight provinces that had broiler marketing boards operating in the period covered in the study contained some provisions to deal with "over-quota surplus."[1] British Columbia and Nova Scotia, for example, had provision to deduct the number of head over quota from the next cycle; Saskatchewan and New Brunswick charged 5¢ per bird and had a suspension or other penalty for any production over the allowed marketing quotas. Similarly, New Brunswick and Nova Scotia charged 1/8¢ per lb. and 1/5¢ per lb. (liveweight) on surplus imported from other provinces.

Price Setting

In all provinces, broiler marketing boards set minimum (live to producers) prices as follows:

British Columbia, Manitoba, Ontario and Quebec--f.o.b. farm ungraded.

Alberta, Saskatchewan, New Brunswick and Nova Scotia--f.o.b. plant graded.

British Columbia also sets minimum prices paid by producers to hatcheries, wholesalers to processors, and retailers to processors or wholesalers. Characteristics and make-up of the price setting committee is given in Table 6-3.

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[1] There had been no surplus removal program for broilers in the provinces (except some in Nova Scotia) in a fashion similar to that operating in the egg marketing system (especially in British Columbia, Manitoba and Ontario). Over-quota surplus was dealt with by changing the length of the production cycle and in some provinces by imposing an "over-quota surplus levy". This was a necessary measure to balance supply and demand in each province.

Producers' Quota

Except for Newfoundland and Prince Edward Island, all provinces had their broiler marketing boards issuing primary quotas to the broiler growers either weekly, monthly or when required. Some provinces, i.e., British Columbia, Manitoba and Ontario, had provisions for secondary quotas, while Alberta and Saskatchewan issued permits. In five provinces--British Columbia, Alberta, Saskatchewan, Quebec and Nova Scotia--marketing quotas were transferable with some restrictions and the procedure of increasing the size of marketing quotas also varied from province to province.[1]

Number of Producers and Concentration in Broiler Production

Depending on the minimum flock size clause in the marketing plan of each province, and the overall size of the broiler industry, the number of producers under-quota and not under-quota varied in different provinces.[1] The largest number of broiler producers was in Quebec (1465) with 35.68 percent of the total Canadian broiler market share. Ontario, which produced a similar volume for the Canadian broiler market, had a lesser number of chicken broiler growers (669) all with under-quotas since no minimum flock size exemption clause existed in the Ontario Chicken Broiler Marketing Plan. British Columbia, with 8.98 percent of Canadian broiler production, had 125 producers, all under quota range.

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[1] Table 6-3.

After analyzing the salient points of similarities and differences among the various provincial broil-

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[1] According to the latest information available (1972) the following table gives data on the number of producers under-quota and not under-quota with the proportion of total volume of broilers produced by each category.

Number of Producers Under-Quota with Percentage of Total Volume (Head), 1973

	Number of Producers Under-Quota	% of Total Volume	Number of Producers Not Under-Quota	% of Total Volume
British Columbia	125	100.0	nil	nil
Ontario	669	100.0	nil	nil
Saskatchewan	80	75.0	2500	25.0
Manitoba	125	87.0	N.A.	13.0
Quebec	1465	100.0	nil	nil
New Brunswick	30	100.0	nil	nil
Nova Scotia	53	100.0	nil	nil

Source: Table 6-3.

er marketing boards in Canada, it was considered advisable to proceed with the evaluation of quota policies of individual selected marketing boards.

The British Columbia Broiler Growers' Marketing Board

General Background

In 1957, growers in the Province of British Columbia organized "The British Columbia Broilers Growers' Association" to look after the interests of its members. This was a voluntary society without any legal authority to control either the production or the marketing of broiler chickens in the Province. In fact, there was no evidence in the constitution of the Association that it had any intention of performing this function.

However, prices paid to growers in the Province declined from 27 cents per pound in 1948 to 23 cents in 1960, and further to 16.5 cents in 1961.[1] This level of prices was considered too low for individual growers to survive economically, and consequently, a meeting of the Association was called to discuss the problem.

After considerable debate, it was decided by members of the Association to cut back production voluntarily. Anticipating that a general reduction in output would exert an upward pressure on prices, most growers doubled production and as a result, there was a "glut" on the market.

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[1] Canada Department of Agriculture, *Poultry Market Review* (Ottawa: CDA, 1960-61).

Growers then felt that another solution to the problem would be to set up a committee to meet with processors and to negotiate for a guaranteed higher price. A committee was set up but when it met with processors, the latter were quite unsympathetic to the growers' requests and advised the committee to get its members to devise ways and means of managing their affairs in a more rational manner.

Powers of the Board

With this rebuff, growers then elected to organize themselves into a growers' board under the Natural Product Marketing (British Columbia) Act. The Board was established by Order-in-Council number 3093, approved on December 12, 1961, and the control program became effective on January 1, 1962. The purpose and intent of the plan was to provide for the effective promotion, control and regulation of any and all respects of the marketing of broiler chickens in the Province. This included as well such facets of marketing as transportation, processing, packing and storage.

The scheme applied to all persons who transported, processed, packed, stored or marketed broiler chickens in the Province of British Columbia. The Board was endowed with powers to promote, regulate, and control all aspects of transportation, processing, packing, storing and marketing of broiler chickens within the Province of British Columbia. The Board, however, had no authority to control production.[1]

In summary, the growers, through the instrumentality of their Board, then had the legal authority to require all persons engaged in the production, transportation, processing, packing, storing or marketing of broiler chickens to register with and obtain licenses from the Board. Secondly, they were authorized to fix the prices at which broiler chickens were to be sold and, in addition, to fix different prices for different parts of the Province. Thirdly, they were authorized to regulate the time and place and to designate the agency through which broiler chickens were to be processed, packed, stored or marketed and to determine the manner of distribution of the quantity and quality or class of broiler chicken that was to be transported, processed, packed, stored or marketed at any time. Finally, they were authorized to prohibit transportation, processing, packaging, storage or marketing of any grade, quality or class of broiler chickens and also to determine the charges that might be made for the services of any designated agency.[1]

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[1] The reason for this was presumably that under the British North America Act no corporation or board could control production directly. This did not preclude an indirect control over production through control of the amount that any producer could market at a given time. In order to escape the direct grip of this provision contained in the Constitution of Canada, most marketing boards that desired to control production did so by exercising legal control over the quality and quantity of regulated commodity that was marketed by an individual over a period of time. The power over marketing virtually gave control over production.

The creation of this marketing board had effectively organized the growers into a quasi-monopoly that was explicitly designed to exercise countervailing power in order to curb any excesses in the conduct and performance of the large integrated firms. However, the assumption of monopoly control did raise serious questions regarding the pattern of behaviour that would evolve after the Board had resolved the initial problems of over-production, low prices and unsatisfactory incomes.

Development of the Quota System: Some Comments by Way of Economic Evaluation

Since this marketing plan did not explicitly provide for control of production at the farm firm level, a grower could produce as many broiler chickens as he liked, but he could market only the quantities stipulated in his quota.[1] Production in excess of this quota had to be stored at the growers' expense until such time as the Board considered that it could be absorbed without impairing the stability of the industry.

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[1] Furthermore, in order that a system of control could be really effective it was necessary that the Board be in a position to exercise some control over interprovincial and international trade (constitutionally, this aspect related to the responsibility of the Federal Government). The Board requested and obtained, in April, 1962, an extension of powers in partial form from the Governor-in-Council under the provision of the Agricultural Products Marketing Act of Canada.

Initially, each grower who wished to be registered under the British Columbia Broiler Marketing Board had to apply for a license. In the application, the grower was required to specify total physical production facilities, such as the number of buildings, the number of floors, the length and the width of the floors, and the total number of square feet in each building. The Board did not consider the legal status of an affidavit. Applicants found giving incorrect information were liable to a fine or imprisonment. The total square footage reported on the application form was authorized as the applicant's total basic market quota. This quota stipulated the maximum number of chickens that the applicant might market in any one quota period. However, he was allotted an annual crop quota for each quota period which was fixed at a certain percentage of his total basic market quota.[1]

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[1] While there was no formal negotiating agency or quota committee as such, the Board met with representatives of processors, hatcheries and feed manufacturers once a week to discuss prices and market requirements. The Board, however, made the final decision regarding prices and the quantity of birds to be marketed. Crop quotas were alloted after an examination was made of the sales in previous quota periods, egg placements and the supply situations relating to broiler chickens in B.C., Alberta and the United States, the rate of disappearance and sales at the same time in the previous year, and so on.

Another prominent feature of the Board's regulation pertained to the limit on the acquisition of a quota. No grower was allowed a quota in excess of 30,000 birds, and the proposed transfer could not put the total quota over this figure. The intention of this regulation was to restrict the growth and size of the individual farm units to 30,000 birds. Cost of production studies by the Department of Poultry Science, Faculty of Agriculture, University of British Columbia indicated that this was the optimum size of farm unit. Since farm units beyond this size would incur increasing costs, the Board set this limit. Moreover, other studies indicated that the most economic size of farm unit in broiler production was one of about 20,000 birds. Thus, the primary purpose of the regulations in British Columbia was to transform the average broiler farm from an economic unit into the optimum size of farm firm.

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[1] From the inception date of the British Columbia Marketing Board until 1965, the transfer of quotas was not permitted. Quotas were attached to the grower and reverted to the board if the farmer desired either to dispose of his farm or to switch to an alternative type of farm production. After 1965, however, the transfer of quotas was allowed under certain regulations. Growers desiring to sell their quotas were free to charge whatever price and impose whatever conditions of sale they deemed appropriate and purchasers were willing to accept. This was a serious question fraught with significant social implications. The question that immediately arose was whether the Board had a responsibility to the public in this matter. The Board had been entrusted with the responsibility for the administration and equitable distribution of this free gift as a right to produce broiler chicken in the Province.

In addition, the Board had adopted three regulations designed to help implement its policy and to encourage expansion in the size of the farm unit to the optimum level. These regulations were: that a committee of four appointed by the Board review all applications for transfer and present a written report on forms prescribed by the Board. Second, that any quota increase granted by the Board could not be transferred until five years after it had been granted. This regulation was intended to minimize speculative trading quotas; it also guaranteed that when a prospective transferee desired an increase in his original allotment through the transfer of a quota, he had sufficient managerial skill and a genuine desire to use the quota to increase the size of his business. Third, any grower transferring his quota must transfer all his quota and not a part thereof. The purpose of having a committee was presumably to maintain some control and consistency in the Board's policy regarding the transfer of quotas.

The policy of restricting all transfers to growers who were already established under this scheme was grounded on the assumptions that there was an automatic incentive sufficiently strong to induce small-scale, less efficient growers (those with quotas of less than 10,000 birds) to sell their quotas, and that those who held quotas varying in size from 10,000 to 20,000 birds possessed the necessary managerial skill and were anxious to expand the size of their farm.

The quota policy put a virtual umbrella over all growers, efficient and inefficient alike. It ensured all growers of a guaranteed market where competition among growers had been eliminated. Each grower was therefore assured of a guaranteed income that had increased substantially since the inception of the Board. Thus, each grower had a certain measure of security, and the inducement associated with an alternative had to be overwhelmingly strong for the small grower to abandon this security. Large growers, who also had a guaranteed income and enjoyed a certain measure of security, on the other hand, did not have a particularly strong incentive to increase the size of their farm businesses. They appeared to be completely satisfied with their level of earnings and did not want to jeopardize it by assuming the risks inherent in a larger business. They might well have contended that the extra earnings did not merit the assumption of an additional risk. The security associated with the scheme might have modified incentives seriously enough that growers were indifferent to the potential for extra earnings. Growers might also point out that they were doing as well as or better than their neighbours, and consequently, there were no real pressures for expansion.

The Board's policy whereby a grower transferring his quota must transfer all and not part of it introduced some flexibility in farm production. The objective in not permitting a grower to transfer a part of his quota was associated with the Board's goal of maintaining a stable supply of broiler chickens. In cases of diversified farm operations such as existed among growers with a relatively small quota, this policy so restricted the grower that the enterprise combination forced upon him might have been inconsistent with the optimum use of his resources. The fact that a quota was attached to the registered grower and not to a particular farm suggested that a grower could sell his farm without having to dispose of his quota. Thus production need not be localized geographically to a particular area as is the case with flue cured tobacco in Ontario.

Some Economic Implications of Restrictions on Quota Transferability with Reference to the British Columbia Broiler Marketing Board

In evaluating the economic implications of a restriction on quota transferability[1] as exercised by the

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[1] Short of a complete ban on transactions involving quota privileges, the most typical limitations on transfers are:

(a) Indivisibility of quota privileges--transaction may involve quotas but not quota fractions.

(b) Quotas tied with farm, requiring that one seeks control over the farm in order to acquire the quota privileges associated with it.

(c) An upper limit placed on acquisition of quota privileges.

British Columbia Marketing Board, it is relevant to present the following theoretical model. In Figure 6-5, OS_1 and S_2S_2 are two broiler producers supply schedules.[1] Their horizontal summation results in OS_aS_b under the assumption that there are no external economies and a set of input prices are given. D_1D_1 and D_2D_2 are the demand schedules facing producer 1 and 2 and the initial price is P_0. Quantities supplied (as determined by the quota allocations) are $\bar{q}_1$, $\bar{q}_1'$; and $\bar{Q}_2$ is a horizontal summation of q_2, and q_1' as shown in Figure 6-4c.

Suppose the British Columbia Broiler Marketing Board installs a preference initiating supply management that calls for a price fixed at P_3 (minimum price to producers fixed as fiat through allocation of marketing quotas). The relevant broilers marketing allowance consistent with the fixed price P_3 is $\bar{Q}_2$ reflecting the horizontal summation of the quotas allocated to producer 1 and 2.[2]

Broiler producer 1 and 2 may not necessarily have the same cost schedules[3] and consequently, that may

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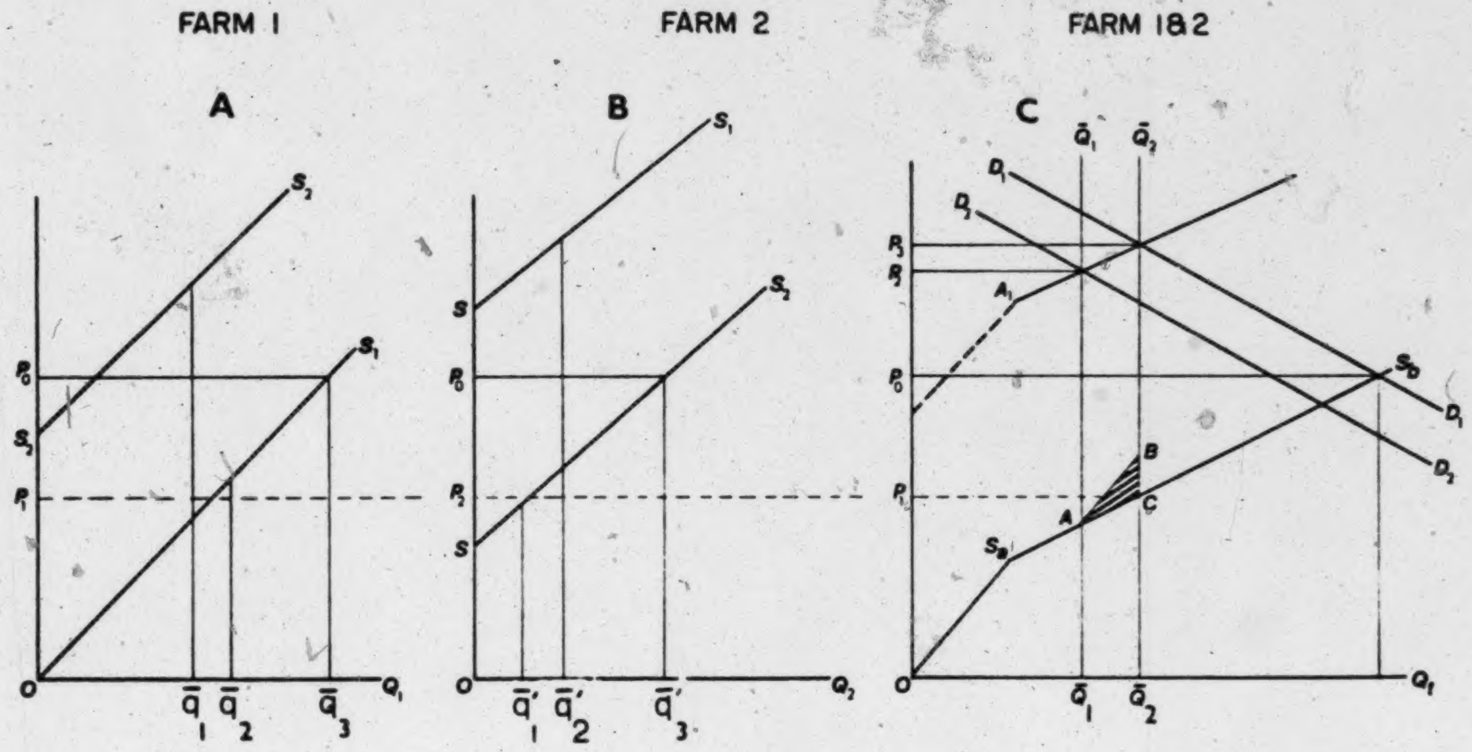
[1] The magnitude of these supply schedules can be determined by the size of quotas alloted to each broiler producer in British Columbia.

[2] A most common practice for assigning quota privileges at the commencement of a marketing program relies on a "past rate" principle, i.e., the quota privilege assigned refers to (past) performance.

[3] This is a valid assumption because producer 1 and 2 may not be homogeneous with respect to size, resources (both physical and financial), etc.

FIGURE 6-5

ECONOMIC IMPLICATIONS ASSOCIATED WITH TRANSFERABLE AND NON-TRANSFERABLE MARKETING QUOTAS AS USED BY BRITISH COLUMBIA BROILER MARKETING BOARD


FARM 1
A
S_2
S_1
P_0
S_2
P_1
O
$\bar{q}_1$
$\bar{q}_2$
$\bar{q}_3$
Q_1
FARM 2
B
S_1
S_2
S
P_0
P_2
S
O
$\bar{q}'_1$
$\bar{q}'_2$
$\bar{q}'_3$
Q_2
FARM 1&2
C
$\bar{Q}_1$
$\bar{Q}_2$
D_1
D_2
P_3
P_2
A_1
P_0
S_0
D_1
B
D_2
P_1
C
A
S_8
O
$\bar{Q}_1$
$\bar{Q}_2$
Q_t

produce a disparity in the marginal costs of the two producers. The differential marginal cost structure may bring about an attempt by the broiler producer to sell a portion of his assigned quota while producer 1 desires to acquire these additional rights. The desired transaction involved the privilege of delivering quantity $\bar{q}_2 - \bar{q}_1 = \bar{q}_2' - \bar{q}_1'$. The corresponding price $P_1 - P_0$ represents the price of the privilege to market the broiler or the utilization price on the units of quota privilege involved in the transaction as one full unit.

Under the situation that trade in fractions of quota rights is allowed for the section OS_aAC of the original schedule, OS_aAB would have outlined the aggregate supply schedule if the British Columbia Broiler Chicken Marketing Board's program had no restrictions on transfer of quotas. But, as the British Columbia Broiler Marketing Board had placed restrictions on the transferability of quotas in fractions or in other respects, the relevant section would be OS_aAB instead of OS_aAC. The triangle so generated by the effective restrictions imposed on transfer of quotas represents the welfare loss in the broiler industry of British Columbia.

This analysis is relevant to the initial regulations of the Board with respect to the transfer of basic quotas. These regulations were quite rigid and stipulated that all quotas were the property of the marketing board. During the first five years, however, rigidity in the regulations regarding transfer of quotas made it difficult for growers to adjust the size of their farms in accordance with changes in technology, that could provide the cost economies associated with a larger size of farm unit. This necessitated a change in the Board's policy, that would allow for a transfer of quotas. This could be done under the following regulations which were introduced early in the Broiler Chicken Marketing Board's policies.

Regulations Under Which a Marketing Quota Could be Transferred

1. To qualify, the transferee had to be a registered grower of the British Columbia Broiler Marketing Board.

2. A committee of four appointed by the Board reviewed all the applications for transfer and presented a written report on forms prescribed by the Board.

3. Any grower transferring his quota was required to transfer all his quota, not part.

4. All quotas started on a rented farm by the tenant after the Board came into power were for the use of the tenant unless a written agreement between the two parties prior to this time stated otherwise.

5. The transferee of a quota was required to be the registered owner of the property to which the quota was being transferred.

6. A copy of this registration was required to be produced for the information of the Marketing Board.

7. A quota on a rented farm could not be transferred unless the tenant agreed that he no longer wished to operate the farm.

8. The Board would not approve the transfer of a quota to the owner of a ranted farm.

9. All quotas were the property of the Marketing Board and were granted to the registered growers.

10. Any quota could be cancelled by the Marketing Board for any violation of the orders of the Marketing Board.

11. To be able to acquire a quota, a grower was required to have less than thirty thousand broilers and the proposed transfer could not put the total quota over thirty thousand.

12. The Board assumed no responsibility regarding purchase price or terms of agreement.

13. The Board reserved the right to approve or reject any application for transfer of a quota.

Analyzing the new policies of the Board, it is relevant to note that there were still implicit rigidities, especially in restricting the admission of new members into broiler production. The new regulations still stipulated explicitly that in order to qualify "a transferee must be a registered grower of the British Columbia Broiler Marketing Board[1]. (Table 6-3.) According to the theoretical model presented above, the initial and current restrictions imposed on transfer of quotas caused a loss to society. Several views have been expressed on the loss to society due to such quota transfer restrictions as imposed by marketing boards. According to Parish,[1] this loss is a reflection of misallocated production. Misallocation involves, among other things, production misallocation[2] caused by the rigidities in allocating resources from an inefficient to an efficient enterprise.

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[1] British Columbia Broiler Marketing Board, *Annual Report*, 1969.

Objectives of the British Columbia Broiler Marketing Board

Beside the secondary objectives of achieving the overall efficiency in the marketing of provincially-produced broilers, the primary objectives of the quota policies of the British Columbia Broiler Marketing Board can be listed as follows:

1. Price and income stability for the broiler producers.

2. Proper resource allocation by achieving adjustments to the changing structure and organization of broiler production and marketing in the province.

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[1] R. N. Parish, "On Marketing Quotas for Fluid Milk", *Australian Journal of Agricultural Economics*, Vol. VII, No. 1 (1963).

[2] See: V. C. Walker, "Marketing Boards and Quota Policies for Canadian Farm Products: An Appraisal of Performance," *Canadian Journal of Agricultural Economics*, Vol. XIV, No. 2 (1968).

3. Growth of the broiler sector in accordance with the growing demand.

The next section is devoted to the evaluation of the Board's quota policies with regard to their success in achieving the above listed objectives.

Evaluation of the Quota Policies of the British Columbia Broiler Marketing Board

With the establishment of the British Columbia Broiler Marketing Scheme in December, 1961, the broiler growers in the province organized themselves into a legalized marketing board with power of control over the supply of broilers to be marketed and the unit farm prices to be paid by the processor. Thus, the broiler industry was transformed from one in which a multiplicity of growers competed among themselves on a market with only a few buyers into one in which the growers determined the supply of broilers to be marketed and the unit prices to be paid to them. The British Columbia Marketing Board became a legal monopoly (industry) with no competitors within the province.[1] It followed the principle that a cut in supply raises price and total revenue,[2] as illustrated by Figure

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[1] Ignoring here the interprovincial movements of broilers.

[2] This is under the assumption that if producers marketed (or produced) a smaller total quantity of broilers, each would receive a higher total price; with a general inelastic demand, limiting supply would raise the total revenues received by the producers.

5-1. Figure 5-2 further illustrates the total revenue and price quantity combinations that a monopolist would use to maximize his revenue and are relevant to the operation of the British Columbia Broiler Marketing Board.

Effects on the Broiler Industry

Within the framework of its objective to achieve price and income stability, in 1961 the British Columbia Broiler Marketing Board placed a ceiling on the total production capacity for the industry as a tool of supply management. In fact, it authorized a total production capacity of 2.6 million square feet. This was increased to 2.8 million square feet effective from 1963 to 1966. The total output for the industry was, therefore, restricted to a little over 12 million birds per year. In addition, the annual crop quotas fixed by the Board varied from 95.4 to 74.3 percent of the basic quota over the period 1962-1966, reaching almost 100 percent in 1969 (Table 6-4). This indicates that the Board allowed the industry to operate with substantial excess capacity during the five-year period 1962-66.[1] This policy of the Board is in line with the basic theoretical model of monopoly as outlined in Chapter V. Due to the existing excess capacity, however, the British Columbia broiler industry showed an expansion

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[1] British Columbia Broiler Marketing Board, *Annual Report*, 1962 66.

Table 6-4

ALLOTMENT OF FIXED BASIC AND CROP QUOTAS, BROILER INDUSTRY, BRITISH COLUMBIA
1962-70*

Year	Number of Growers	Fixed Basic Quota		Crop Quota		Excess Capacity	
		Actual '000 Birds	Index 1962=100	Actual '000 Birds	As % of Basic	Actual '000 Birds	Percent
1962	--	10,825	100	8,202	76	2,623	24
1963	217	11,691	108	9,103	78	2,588	22
1964	191	12,124	112	9,006	74	3,118	26
1965	175	12,124	112	9,640	80	2,484	20
1966	158	12,124	112	11,567	95	557	5
1967	153	12,423	115	11,070	89	1,353	11
1968	146	12,423	115	11,196	90	-1,227	10
1969	134	12,438	115	13,748	103	-1,310	-3
1970	125	12,317	114	13,681	90	-1,364	10

* Quotas were first adopted with the inception of the British Columbia Broiler Marketing Board in 1962.

Source: British Columbia Broiler Marketing Board, *Annual Reports*, 1963-71.

Figure 6-6 shows these changes over the 1962-69 period.

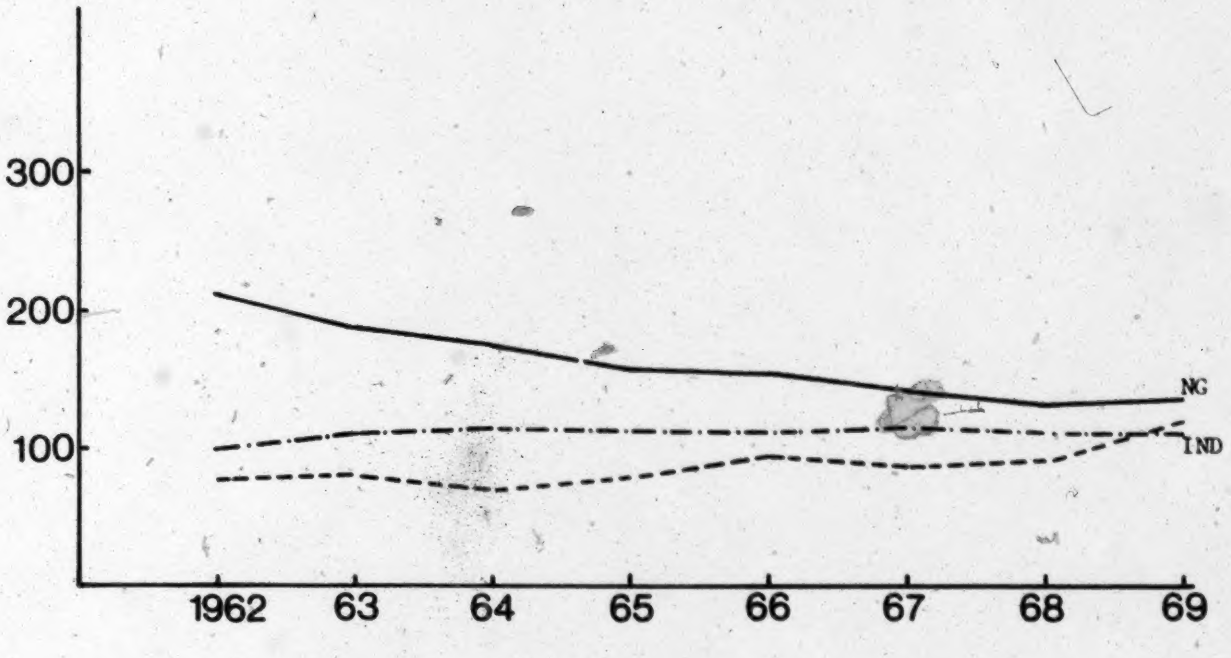
FIGURE 6-6

ALLOTMENT OF FIXED BASIC AND CROP QUOTAS, BROILER CHICKEN INDUSTRY

INDICES 1962 = 100

BRITISH COLUMBIA

(62 = 100)
NG = No. of Growers
IND = INDEX
% = PERCENTAGE - BASIC



of over 94.0 percent during the 1962-70 period.[1]

Effects on Supplies and Trade Position of the Province of British Columbia

Since the board elected to stabilize supply through the allocation of annual crop quotas, there was no apparent reason, apart from error in estimation or in faulty judgment, as to why the Board should not have been successful in stabilizing provincial supply. In fact, the annual crop quota was stabilized between 74.0 percent and 80 perfent of the total basic quota during the 1962-65 period; this was raised to 95.4 percent in 1966. As a result, total supply, as indicated by the number of birds killed, rose from 8.18 million in 1962 to 9.63 million in

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[1] The growth of the British Columbia broiler industry during the last nine years is outlined in the following table:

Year	Numbe[illegible] Broiler Chicke[illegible] Marketed	Pounds of Broiler Chicken Meat Sold at Retail Stores	Percentage Increase
1962	8,182	21,882	--
1963	9,189	15,639	17.2
1964	9,006	25,594	-0.2
1965	9,764	26,614	4.0
1966	11,670	31.850	19.7
1967	11,800	33,020	3.7
1968	12,126	33,068	0.1
1969	13,712	38,436	16.2
1970	15,276	42,638	10.9
$ increase 1962--1970	86.7	94.9	

Source: British Columbia Broiler Marketing Board.

1965. Total supply increased to 11.67 million birds in 1966 due to an increase in the annual crop quota to 95.4 percent that year. Further increases were recorded in 1970 with 15.27 million birds killed (Table 6-5). Quota policies of the Board therefore had been conducive to increasing supply within the concepts of orderly marketing (Figure 6-7).

Still, however, the supplies of broilers were restricted and were not allowed to meet total existing demand within the Province. This caused the coefficients of the provincial broiler trade position to stay under 1.0 through the 1961-70 (except 1963) period (Table 6-6). From 1966 to 1969, the trade position coefficients indicate that more than one-quarter of the provincial demand for broilers was satisfied by imports from other provinces of Canada and from the adjoining states of the United States of America. It suggests that the quota policies of the Broiler Marketing Board in British Columbia did not go in line with the expanding demand for broilers in the province and therefore necessitated the resultant imports.

Effects on Concentration in the Industry

After the institution of quota policies, the British Columbia broiler industry underwent substantial structural changes. Some of the important changes were:

A. Total number of growers declined from 217 in 1963 to 134 in 1969.

Table 6-5

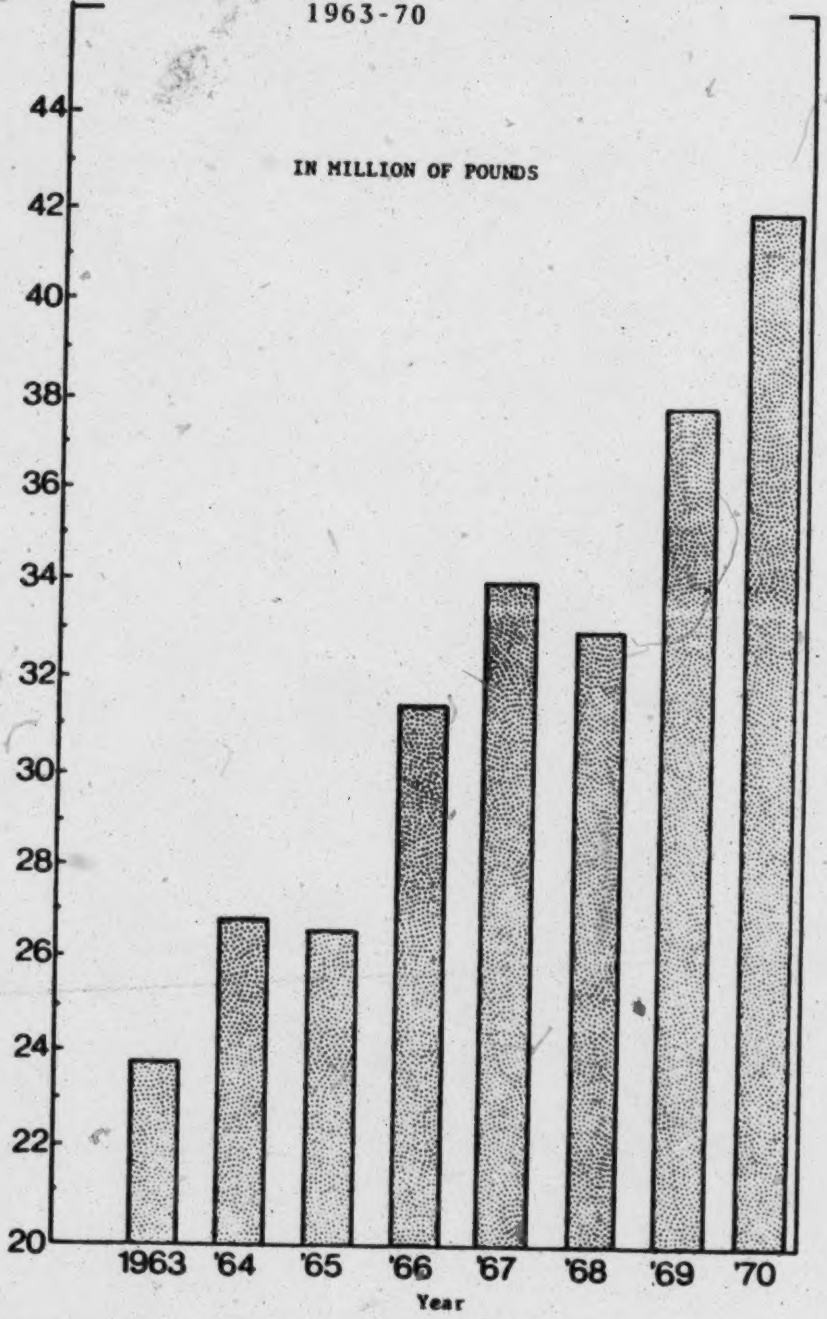
PRODUCTION OF BROILER CHICKEN (EVISC. WEIGHT), BRITISH COLUMBIA, 1961-1970 (1961=100)

Year	Total Production			
	'000 Birds	Index	'000 Birds	Index
1961	8,836	100.0	23,533	100.0
1962	8,182	92.6	21,881	92.9
1963	9,189	104.0	25,639	108.9
1964	9,066	102.6	25,594	108.7
1965	9,638	109.1	26,261	111.5
1966	11,670	132.1	32,244	137.0
1967	11,890	134.6	33,021	140.3
1968	12,180	137.8	33,193	141.0
1969	13,712	156.0	38,703	164.5
1970	15,276	170.6	41,317	170.5

Source: Canada Department of Agriculture, Markets Information Section, *Weekly Poultry Market Report*, 1961-69 and *Annual Poultry Market Review*, 1966-69 (Ottawa:CDA).

FIGURE 6-7

SALES GROWTH OF GROWN-IN-B.C. CHICKENS AFTER COMMENCEMENT OF SUPPLY MANAGEMENT, 1963-70



Source: British Columbia Broiler Marketing Board: Annual Report, 1970.

Table 6-6

COEFFICIENTS OF BROILER CHICKEN TRADE POSITION
BRITISH COLUMBIA
1961-70

Year	Broiler Trade Position Coefficients[1]
1961	0.98
1962	0.96
1963	1.02
1964	0.86
1965	0.82
1966	0.78
1967	0.72
1968	0.71
1969	0.70
1970	0.68
Average 1961-70	0.92

[1] Trade position coefficients estimated as per capital broiler production : per capita broiler consumption: Canada Department of Agriculture, *Poultry Market Review* (Ottawa: Production and Marketing Branch, 1961-70). (Estimates.)

B. Farm units with quotas of less than 10,000 birds declined (123 in 1963 to 60 in 1966). This is attributable to the adjustments made to capture cost economies with larger units.

C. Decline within the 10,000-20,000 birds group was less than in the small units. This was because this unit size was considered economically viable though not optimum.

D. Most important change was in the unit size with quotas between 10,000 and 29,999 birds--an increase in number from 15 in 1963 to 48 in 1969. This was rationalized in terms of the optimum size of unit for broiler production in British Columbia as being 30,000 birds.

E. Number of units above 30,000 birds did not change much--consistent with the board's policy till 1964, while a decline in their number took place in 1964-69 period.

The above analysis suggests that the quota policy of the Broiler Marketing Board has been conducive to increasing the number of producers in the 10,000-29,999 bird category and generated the cost economies in the broiler industry. Till 1966, by far the largest number of growers possessed farm unit with quotas below the size considered adequate for economic viability. In 1963, 180 farms out of the total 217 were under 19,999 farm size range (a sale below optimum), but in 1969, there were about 50.0 percent of the broiler farms above the optimum size groups, i.e., 20,000-30,000 birds and above (Table 6-7).

Despite these positive effects, the rate of adjustment in the broiler industry has been slow. This can be attributed to the rigidity of the Board's quota policy in the early years (1962-65). The rigidities were in terms of the transfer of quotas as outlined in the preceding section. Since the largest proportion of farm units were below the size considered adequate for economic viability during the 1961-65 period, the industry did not make optimum use of its resources. This, in turn, affected the cost of production, and consequently, the unit price paid for broiler chickens. Associated with this was the fact that during this period, prices paid for broiler chickens in British Columbia were higher than those prevailing in other provinces.

It may be contended that the changes in policy (whereby a transfer of quotas was now permissible) did not have sufficient time to work for their impact on the size of farm unit to be evaluated. The point is, however, that one would imagine sufficient pressures would have been built up during the 1961-65 period to result in almost immediate changes in 1965 when the transfer of quotas became permissible.

On the other hand, if the security associated with a stable income had not modified incentives to expand the size of the farm units to the optimum size, the demand for quotas would have been so great that their selling

Table 6-7

CHANGES IN THE STRUCTURE OF THE BROILER CHICKEN INDUSTRY, BRITISH COLUMBIA, 1963-69

Range of Sizes (Quotas)	Number of Fsrm Units					1969 as a % of 1963
No. of Birds	1963	1964	1965	1966	1969[1]	
0- 9,999	123	90	72	60	36	29.3
10,000-19,999	57	63	51	49	33	57.9
20,000-29,999	15	16	29	28	48	320.0
30,000+	22	22	20	21	17	77.3
Total	217	191	172	158	134	
% of 1963	100.0	88.0	79.3	72.8	61.8	

[1] In 1969 no new market quotas were issued by the Board. The total basic market quotas remained unchanged from 1968. Ten growers with a total of 122,300 basic market quotas took advantage of the Board's quota transfer policy which permitted transfer of quotas from registered growers to other registered growers with less than 30,000 birds. The following data indicate the 1969 size of each registered grower (concentration level in the industry).

Range of Sizes	Number of Registered Growers	Percent Of Total
0- 9,999	36	26.8
10,000-19,999	33	24.6
20,000-29,999	48	33.5
30,000+	17	15.1
	134	100.0

These figures show important changes, especially with reference to the number of registered growers with an optimum size operation. However, almost 27.0 percent of the total growers existed in the size range of below 10,000 birds, but this was much less than it was in 1966, indicating the positive implications of the Board's policies during this period. Board's quota policies have been effective in creating optimum conditions within the British Columbia Broiler Industry.

Source: British Columbia Broiler Marketing Board, *Annual Reports*, 1963-69 and other unpublished information obtained directly from the Board.

price would have been at a very high level. The situation, however, improved after 1966 and by 1969 there were substantial reductions in the number of registered growers in the province.

Effects on Capitalization

Associated with the restrictions placed by the Board as an upper limit on the total productive capacity of the industry, two additional points could be analyzed. First, the quota policy of the Board restricted the admission of new growers into the industry and second, it placed an upper limit of 30,000 birds on the size of quota that could be held by an individual farm unit. Thus, the desire for adjustment through acquisition of additional quotas in the size of farm units below 30,000 birds created a buoyant demand for additional quotas on the part of those growers with both the incentive and the managerial skills to handle a larger unit. Since the basic quotas were maintained at a fixed level, and the Board did not see fit to increase the total basic quota authorized for the industry, it had an effect on reducing quotas to the status of a scarce factor.

Quotas therefore assumed values. The greater the demand relative to supply, and the greater the probability that control would continue and/or become permanent, the greater the value that was placed on these quotas. This was illustrated by the fact that the value of quotas in British Columbia rose from 25 cents per bird in 1964 to between 50 and 60 cents per bird in 1967. Thus, assuming a rate of interest of 5 percent per annum, the contribution made by the value assumed by these quotas to production costs of broiler chickens during the period from 1964 to 1967 increased from 1.2 cents per bird in 1964 to 2.5 cents per bird in 1967. Thus, capitalization of quota rights increased production costs and the prices paid for broiler chickens in the Province of British Columbia. The trend continued and it was estimated that, by 1969, the production costs of broiler chickens increased by 3.7 cents per bird, and by 4.6 cents per bird in 1970-71.

Effects on Prices

One of the main objectives of the British Columbia Broiler Marketing Board was to achieve price stability. In order to analyze whether the Board had been successful in achieving this objective, it was advisable to use the weekly price data at producer and wholesale levels for a test of price stability for the period 1961-69. Since it covered only one year of pre-board supply management, no logical conclusion could be drawn by comparing the 1961-62 period(as pre-board period) and the 1962-69 period (as post-board period). As such, the estimated standard deviation for British Columbia was compared with the standard deviations computed for other provinces. The standard deviation estimated on weekly broiler price data at the producer level for the post-board period (1962-69) for British Columbia was 1.12 as compared to 1.0 for Alberta, 1.01 for Saskatchewan, 0.93 for Manitoba, and 1.09 for Ontario. Analysis of the estimates (Table 6-8) suggests that the board has been successful in achieving price stability on the prevailing standards for other provinces during the post-board period. The average broiler chicken price in 1962-69 was estimated at 21.5 cents per pound, which compared closely to the prices received in other Prairie Provinces and in Toronto.

It appears that besides achieving price stability in the broiler industry, the British Columbia Broiler Growers' Marketing Board also succeeded in keeping the broiler price increase in line with the cost of inputs that were required in the production of broilers.[1] British Columbia growers seem to have matched the high costs of production with fairly low and stable prices by adopting new innovations that had been flowing from research and technological changes in Canadian agriculture. Production efficiencies have been adequate to offset the higher

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[1] Adjustment of cost of broiler production could be made successfully in normal times but when costs increased rapidly or suddenly, it caused problems in accurate adjustments. Inaccurate estimates could lead to excessive profits or loss to the farmers either by the inability of boards to capture the cost items fully in the pricing of the product or by reduction in demand for broilers if the minimum prices to producers were fixed at a higher level and therefore affected the wholesale and retail level prices.

Table 6-8

WEEKLY PRICE DATA FOR BROILER CHICKEN AND RELEVANT STATISTICAL ESTIMATES OF PRICE STABILITY AT TWO LEVELS, BRITISH COLUMBIA, 1962-69

	Producers' Level	Wholesale Level
	Post-Board	Post-Board
Sample Size	409	343
Maximum (Price)	23.5	46.0
Minimum (Price)	18.0	32.0
Range	5.5	14.0
Mean (Price)	21.5	41.3
Variance	1.25	8.8
Standard Deviation	1.12	2.9
Mean Deviation	0.83	1.8
Median (Price)	21.5	41.0
Mode (Price)	22.5	40.0

Estimates from weekly broiler price data.

Source: Canada Department of Agriculture, *Poultry Market Review* (Ottawa: CDA, 1961-69).

production costs and thus have given the broiler producers a gradually increasing fair income.

Price behaviour of broiler chicken does not seem to have remained the same at the wholesale level. Standard deviation estimates in Table 6-8 for broiler prices at the wholesale level suggest a bigger standard deviation (2.9) compared to the one estimated for the producer level (1.12) for the same post-board period (1962-69), the mean price being 41.3 cents per pound at the wholesale level.

Effects on Absolute Margins

Table 6-8 suggests that wholesale prices were substantially higher than producer prices; the quota policies of the British Columbia Broiler Growers' Marketing Board, however, stabilized the producer-to-wholesale margins[1] over the period 1965-72. This is suggested by the plot of the continuous difference of the weekly broiler prices at the producer and wholesale level in British Columbia over the 1965-72 period (Figure 6-8). A degree of short-run stability in absolute margins can therefore be attributed to the quota policies of the British Columbia Broiler

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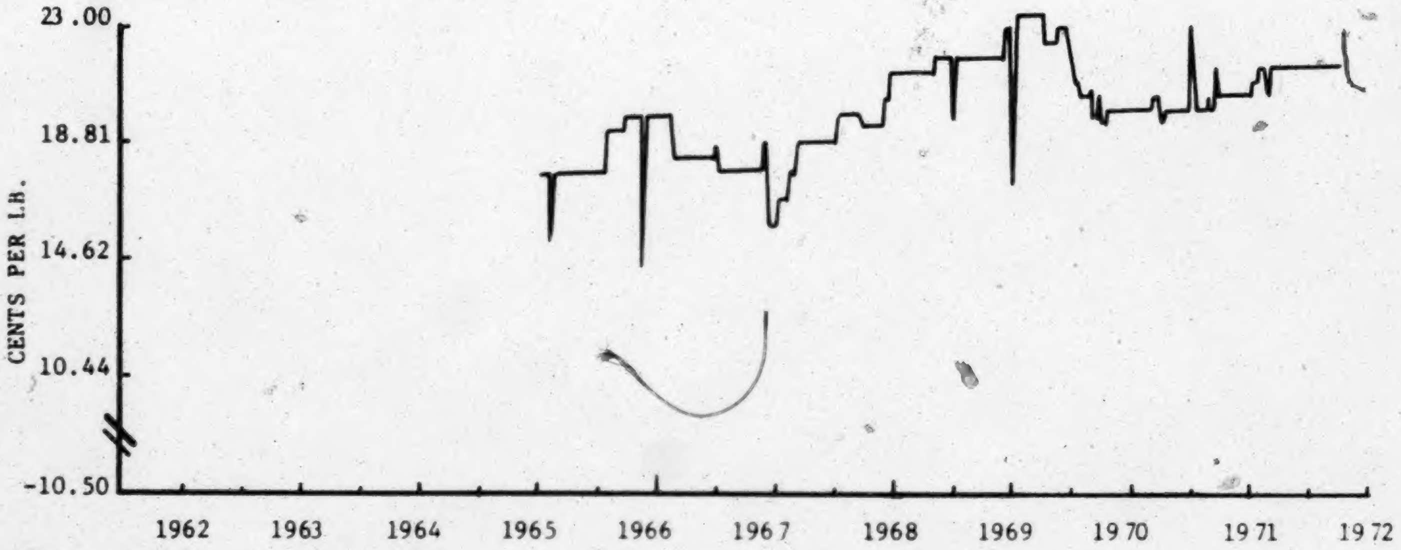
[1] Margins represent the price mark-up at each marketing stage as the broiler chickens move from the farm to the consumer. Theoretically, margins equal the value added at each stage through changes in form or services rendered. The producer-to-wholesale margin is the difference between what the wholesaler-processor pays the farmer and the price he charges the retailer.

FIGURE 6-8

BROILER WHOLESALE TO PRODUCERS' MARGINS, VANCOUVER



Chicken Marketing Board. The short-run stability in absolute margins, however, is achieved at a higher level. The fluctuations over time can be attributed to the changes in the costs of production at farm level (specially the feed costs) which are reflected in the producers' minimum prices. (Figure 6-8.)[1]

Effects on Income

Beside price stability, income stability and a gradual increase in income for broiler growers was another objective that the British Columbia Broiler Marketing Board successfully achieved. Available data on income for six years of the post-board period (1962-67) were analyzed and, as the indices indicate, it seems that income per grower registered a continuous increase of 71.8 percent (except a drop in 1964) during the six-year period (Table 6-9.) Income per grower continuously increased from $34,341 in 1962 to $58,497 in 1967. This increase could be associated with the fact that the total number of registered growers also continuously decreased in British Columbia--from 217 broiler growers in 1963 to 159 in 1967. This implies that the quota policies of the British Columbia Broiler Growers' Marketing Board contributed to higher

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[1] Higher wholesale and retail prices of broilers can be partially justified because British Columbia had been a relatively high wage area due to the organized labor force. In 1962, for example, the wage rate in a poultry processing plant was, on the average, $1.20 per hour which increased to $2.75 per hour in 1971. This was the highest hourly wage rate for processing plant workers in Canada. Even at the retail level, wage rates had been highest in British Columbia, contributing to higher broiler prices at the retailer-to-consumer level.

Table 6-9

INCOME FROM BROILER CHICKEN, BRITISH COLUMBIA, 1962-67

Year	Actual Farm Price		Gross Farm Income		No. of Growers		Incomr per Grower	
	Actual Cents	Index (1962=100)	Actual $ 000	Index (1962=100)	Actual Nos.	Index (1963=100)	Actual $	Index (1963=100)
1962	21.3	100.0	5785	100.0	--	--	--	--
1963	22.0	103.3	7452	128.8	217	100.0	34,341	100.0
1964	19.2	90.1	6438	111.3	191	88.0	33,707	98.2
1965	21.2	99.5	7916	136.8	175	80.6	45,234	131.7
1966	21.8	102.3	9225	159.5	158	72.8	58,365	170.0
1967	21.7	102.8	9247	159.1	159	72.9	58,497	171.8

Source: Data supplied by the British Columbia Broiler Marketing Board.

concentration which was considered necessary in achieving the required income level.

Summary

The British Columbia Broiler Growers' Marketing Board was established on December 12, 1961, and the control program became effective January 1, 1962. The marketing plan was instituted to provide means for the effective promotion, control and regulation of any and all respects of the marketing of broiler chickens in British Columbia. This also included such facets of marketing as transportation, processing, packing and storage. Beside the secondary objectives of achieving overall efficiency in the marketing of provincially produced broilers, the primary objectives for which the British Columbia Broiler Marketing Board was created were: (1) to achieve price and income stability of broiler growers in the province; (2) to allow growth in the broiler sector in accordance with expansion in market demand; (3) to achieve proper resource allocation by achieving adjustment according to the changing structure and organization of broiler production and marketing.

Evaluation of the quota policies as instituted by the Broiler Growers' Marketing Board revealed that the Board has been successful in achieving most of its objectives. The following summary conclusions can be listed as the most important.

(1) Board's policy of placing a ceiling on the total productive capacity for the broiler industry allowed the industry to operate with substantial excess capacity during the early five-year period (1962-66). Despite the existing excess capacity, the British Columbia broiler industry expanded by over 94.0 percent during 1962-70 period.

(2) After the institution of quota policies, the British Columbia broiler industry underwent substantial structural changes. Total number of growers declined--the most important change being in the unit size with quotas of 20,000 to less than 30,000 birds. This was a positive change in terms of creating the optimum size of units for broiler production in the province. The optimum conditions so generated by the quota system deserve appreciation.

(3) Despite the creation of optimum conditions in the British Columbia broiler industry, the rate of adjustment has been slow. This could be explained by rigidities in the quota system which prohibited the transfer of quotas during the first years of a grower's operation. However, after 1965 this limitation was removed and transfer of quotas was permitted: this changed the number of registered growers substantially during 1965-69 period. The broiler industry became more concentrated and therefore commanded more countervailing power to change the terms of trade.

(4) Marketing quotas, being initially scarce,

assumed values according to the simple law of demand and supply. The capitalization of quota rights increased production costs and the consumer prices paid for broiler chicken in the Province of British Columbia.

(5) Though the Board succeeded in stabilizing the provincial supplies of broiler chicken at a higher level through the use of quota policies, it did not increase in line with the increasing demand. British Columbia, therefore, remained a deficit province throughout 1961-70 period (except 1963) and imported broiler chicken from other Canadian provinces and the United States of America.

(6) A price stability test on the weekly broiler price data for the Province of British Columbia revealed that the Broiler Board has been successful in achieving price stability compared to the prevailing standard for other provinces.

(7) Besides achieving price stability in the broiler industry, the British Columbia Broiler Growers' Marketing Board also succeeded in keeping the broiler price increase in line with the cost of inputs that were required in the production of broilers.

(8) British Columbia broiler growers seem to have matched the high costs of production with fairly low and stable prices by adopting new innovations that had been flowing from research and technological changes in Canadian agriculture.

(9) Although wholesale prices appeared to be at a higher level than producers' prices, the quota policies of the British Columbia Broiler Growers' Marketing Board stabilized the wholesale-to-producer margins over the period 1965-72.

(10) Besides price and margin stability, income improvement and stability was also achieved in the broiler industry through the use of quota policies.

The Alberta Broiler Growers' Marketing Board

The set of economic circumstances that culminated in the establishment of the Alberta Broiler Growers' Marketing Board were similar to those that existed in other provinces. Aggressive sales promotion by feed companies expanded the market for their products; the hatcheries provided a type of bird that, when fed with high-energy rations, contributed to revolutionizing the broiler chicken industry.[1]

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[1] Production changes in Alberta can be interpreted from marketing data which indicates that poultry marketing through all registered stations increased from 23,156,000 lbs. in 1959 to 45,533,000 lbs. in 1968, on an eviscerated basis. Marketing of broiler chickens (under 4 lbs. eviscerated weight) in 1959 totalled 6,670,000 lbs., marketing increased to 25,570,000 lbs, in 1968. Extrapolation of this trend indicates marketing of 40.3 million lbs. by 1975 and 50.8 million lbs. by 1980. Broilers are becoming a significant factor in total poultry marketings, increasing their share in this category from 29 percent in 1959 to 56 percent in 1968. Alberta ranked fourth in broilers slaughtered by the province in 1969 with 6 percent of total Canadian output, following Quebec with 39 percent, Ontario with 36 percent, and British Columbia with 7 percent. R. R. Hurnanen, M. H. Hawkins, and T. W. Manning, *Vertical Integration and Concentration in the Alberta Broiler Industry,* Research Bulletin 8 (Edmonton: Dept. of Agricultural Economics and Rural Sociology University of Alberta, 1970).

In this particular type of economic environment, there had been a large expansion in the production of broiler chicken. Broiler prices and supplies remained unstable during the first half of the 1960's. In the 1961-62 period, for example, broiler prices to producers ranged between 18¢/lb. to 25¢/lb.

In this situation producers realized the importance of creating an all-producers' board that would constitute elements of supply management with a major objective to achieve supply-price stability along with the desired income stability for the individual grower members.

Powers of the Board

The Board sought to regulate the marketing of broiler chickens on a quota basis. The quota, however, was not a delivery quota in the way it was construed for wheat or vegetables. It was a quota based on an authorized square footage of space, and was similar in its application to that adopted by the Broiler Board of British Columbia.

Development of the Quota System

In anticipation of the allotment of initial quotas based on existing physical production facilities, growers meanwhile embarked on a "crash" building program and by the time the creation of the Board was finally approved, some growers had almost doubled their facilities. Prior to the initiation of the marketing plan, a registration was made of all producers who had marketed in excess of 2,000 birds in the base period. Measurements were then made of each grower's premises in order to determine the amount of physical production facilities. A basic quota equivalent to his total production facilities at the time of measurement was allotted to each grower.

On October 31, 1966 a total basic quota of 1,918,000 square feet of floor space was authorized by the Board. To the end of 1970 the Board had authorized 2.260 million square feet of production space, of which 2.252 million square feet had actually been built. This suggests that financial status, not necessarily managerial skill, were used as a basis for granting quotas (based on physical production facilities). If the limit of 30,000 square feet that was placed on growth in size per unit in British Columbia is considered as realistic, then the allotment of quotas to some firms suggested that there was a lack of objectivity in the allocation of basic quotas in Alberta.

Some Economic Implications of Restriction on Transfer of Quotas

Quite unlike the policies in British Columbia with respect to the ownership of quotas, the policy of the Alberta Broiler Growers' Marketing Board was that quotas were the property of the Board. As such, they might have been allotted or withdrawn according to the Board's regulations. Thus, any quota allotted to a registered producer in respect of the authorized premises automatically reverted to the Board during any period of time in which the authorized premises were not being used for the production of broilers.

Transfers of quotas were allowed with the authority of the Board. Normally the Board did not authorize transfers between persons unless the transfer of quotas was accompanied by either: (1) a bonafide transfer of ownership or title of the authorized premises, or (2) a bonafide rental or lease agreement between the owner and the lessee. While the Board's policy was that "no monies might be paid or received in consideration of a transfer of quotas between persons," there were no safeguards that would ensure its implementation.

Quota Allocation as Proportion of Basic Quota

The Alberta Broiler Grower's Marketing Board had been continuously revising the overall quota allocations, based on the market demand and supply situation. Appendix F shows that marketing quotas ranged from a low of 80.0 percent on July 25, 1967 to 110.0 percent on December 11, 1972. Quota allocations were determined according to the estimates based on the existing and expected broiler stocks and the expected expansion in demand for broiler chickens in the next period. Table 6-3 provides the details of the various functional, administrative, quota and pricing policies of the Alberta Broiler Growers' Marketing Board. Table 6-10 is included to illustrate the

Table 6-10

METHOD OF MARKETING

ALBERTA MARKETING PROJECTION FOR BROILER AS A GUIDELINE TO QUOTA ALLOCATIONS

To August 10, based on Placements	
Opening Inventory - June 16	2291 lbs.
Projected marketing - 2617 x .95 return 2.9	7210
Total supply	9501
Less expected L.Y. demand + 5%	6386
Expected Inventory - August 11	3115 lbs.
To September 28	
4 weeks at 110%	
2600 x 1.1 x 2.9 x .91 x 4	3019
3 weeks at 100%	
2600 x 2.9 x .95 x 3	2149
Total supply	8283
Less expected demand L.Y. + 5%	6071
Expected Inventory September 28	2212 lbs.
If demand increased to 7.0% over last year expected Inventory would be	1625
Now:	
(i) 100% quota should produce	716 lbs./wk.
95% quota should produce	680 lbs./wk.
90% quota should produce	645 lbs./wk.
(ii) Demand L.Y. + 5.0%	
September	866 lbs./wk.
October	748 lbs./wk.
November	773 lbs./wk.
December	686 lbs./wk.
December 1 Projected Inventory	
(i) at 90% quota August 6 placements demand L.Y. + 5%	1487
(ii) at 95% quota L.Y. + 7%	770
(iii) at 90% quota L.Y. + 5%	1172
(iv) at 90% quota L.Y. + 7%	455

Source: Alberta Broiler Chicken Growers' Marketing Board, unpublished data, 1973.

method of making marketing projections as used by the Alberta Broiler Growers' Marketing Board. This method of making marketing projections for the purpose of determining quota allocations ignores certain important points.

This method of allocating marketing quotas (as illustrated in Appendix F and Table 6-10) was, in fact, to determine the production levels that each producer was allowed to undertake. The Alberta Broiler Growers' Marketing Board estimated that in an attempt to maximize broiler producer's net returns, it was necessary to involve a total marketing restriction (overall marketing allowance). This is depicted graphically in Figure 6-9. It illustrates two broiler producers with marketing quotas allocated and designated by Q_1 and $Q_2 = Q_3$ (represents the basic quota).

The aggregate marketing quota amounts to Q_3. The price that the board would determine for producers' level with q_1 and q_2 quota magnitudes would be P_3. Exceeding Q_3 would mean overproduction. This may be allowed in cases where demand for broilers exceeds supply (production plus stocks as indicated in Table 6-10). The board would reach a limit greater than 100.0 percent of the basic quota. This may mean that the Broiler Board's marketing allowance now stands at Q_4. The price under sustaining demand now would be fixed at P_4'. Under conditions of overproduction (where supply exceeds demand), the price falls to P_4'. Up to the point where the broiler producers' cost schedules

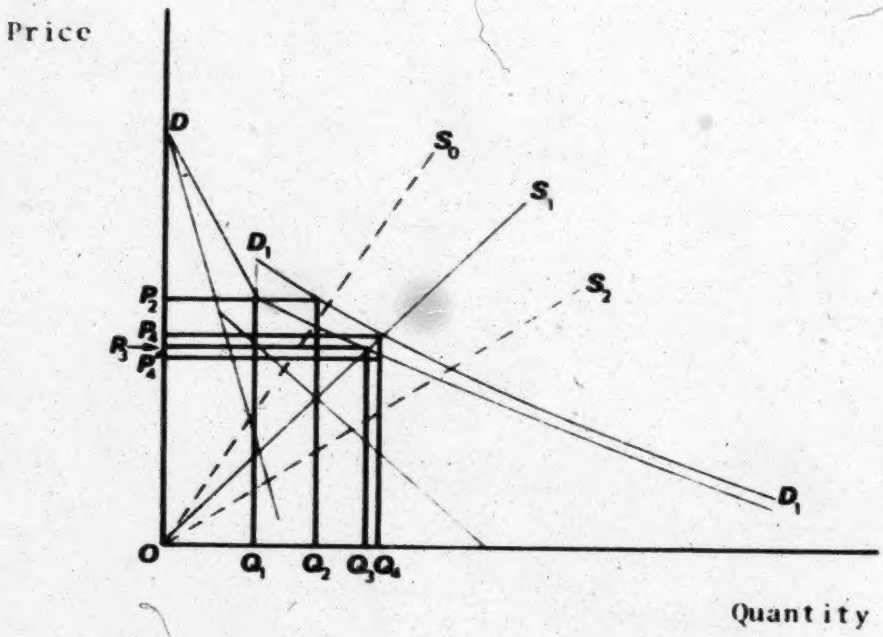
FIGURE 6-9

QUOTA ALLOCATION:

DETERMINATION OF ITS SIZE AND LEVEL,

ALBERTA BROILER CHICKEN MARKETING BOARD

UNDER GIVEN RESTRICTIONS OF TRANSFER


Price
D
S_0
S_1
D_1
S_2
P_2
P_1
P_3
P_4
D_1
O
Q_1
Q_2
Q_3
Q_4
Quantity

are reflected by OS_1 there would be pressure on the Board to enlarge the quota allowance. The demand for increasing the marketing quotas would subside when the total quantity reaches Q_4. This would be acceptable, as long as the principle that the marginal cost of acquiring a unit quota production is equal to the marginal revenue for the quota utilization is satisfied

This explains the combined mechanism of supply and price that regulates the total product flow within a period, and also permits adequate flexibility within the period for broiler producers and processors in Alberta to determine their individual marketing patterns.

Objectives of the Alberta Broiler Growers' Marketing Board

The Alberta Broiler Growers' Marketing Board commenced its operations on September 1, 1966. The objective of its quota policies were: (1) to maintain a fair, stabilized price for broiler chicken; (2) to provide the broiler growers with a higher and stable net income; (3) to provide a uniform high quality broiler chicken for the market; (4) to maintain adequate advertising promotion of broiler chicken for the trade and consumer market; (5) to work with marketing boards having similar objectives such as the British Columbia Broiler Marketing Board.

Despite the benefits that could be achieved through monopolization by vertical integration, Alberta farmers accepted supply management as the second best alternative to achieve their objectives.

Evaluation of the Quota Policies of the Alberta Broiler Growers' Marketing Boards

Effect on the Broiler Industry and Concentration

In January, 1967, a total of 2.452 million square feet of growing space was allotted for the production of broilers by the Alberta Broiler Growers' Marketing Board. The number of growers was 106. Since then the total allocations have varied and so have the number of broiler growers. By September, 1969, a total allocation of 2.128 million square feet of growing space was allotted and the total number of producers holding broiler quotas in the province was 105. Of these, 94 were independent growers and 11 farms were considered part of vertically integrated organizations.[1] The number of integrated farms did not change during the 1969-73 period but the number of inde-

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[1] The total allotments per cycle and the number of growers in the province were as follows:

	1967 Jan.1	1968 Feb.1	1969 Sept.16	1970 May 1	1971 March 1	1972 May 16	1973 May 1
				(per cycle)			
Total Allotments (mil.sq.ft.)	2.45	2.383	2.128	2.228	2.310	2.333	2.637
No. of Growers (nos.)	106	101	104	106	115	114	126

Source: Alberta Broiler Growers' Marketing Board, Edmonton, Alberta.

pendents increased to 126 in 1973 with an increase in the total growing space allotments by the Board. The integrated farms by far became the largest in average size, the average size being 84,800 square feet as compared with an average size of 12,800 square feet for independent operators. Similar to British Columbia, quota policies of the Broiler Board immediately placed a ceiling on the total productive capacity and expansion in the industry was allowed only according to the increase in demand for broiler chicken. Although a limit was placed on the size of quota to be held by an individual unit, a substantial porportion of the business of growing broiler chicken in Alberta still became concentrated in the hands of a relatively small number of firms. A few firms controlling some 40 percent of the business of production expanded the size of their production facilities by 59.4 percent over the period November, 1964 to December, 1966 by way of purchases of property, leasing of premises and/or acquisition of equities in more properties. Since transfers of quotas were authorized by the Board on either sale or lease of premises, it was quite possible that there would be greater concentration of production. As the data suggests, three integrators held 44.00 percent of total quota allotment. The remaining 56.00 percent of the quota was in the hands of 94 independent operators, the largest of which had 74,000 authorized square feet.[1]

Compared to broiler production at the primary level, there was evidence that the concentration at the processing level was much higher.[2] (See Table 6-11.)

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[1] R. R. Hurnanen, M. H. Hawkins and T. W. Manning, *Vertical Integration and Concentration in the Alberta Broiler Industry,* Research Bulletin 8 (Edmonton: Dept. of Agricultural Economics and Rural Sociology, University of Alberta, 1970).

[2] Alberta broiler industry became highly concentrated after the quota policies of the Board were implemented. The following estimate suggests that over 40.0 percent of the total broiler production in Alberta was produced by 11 growers and about 59.6 percent by 24 growers in 1972. Three out of 11 growers with over 40.0 percent quota were in the category of 100,000 and above, while the remaining eight growers were in the 50,000-100,000 category. Of the three growers in 100,000 and above and holding 475,000 square feet, Canada Packers, Pinecrest Foods Ltd. and APM Cooperative had 22.7 percent, 31.6 percent and 45.7 percent of 475,000 quota, respectively.

Concentration in Broiler Production,
Alberta
1972

Category (birds)	No. of Producers	Size of Quota	Percent of Total Quota
100,000 +	3	475,000	20.4
50,000 - 100,000	8	466,800	20.0
25,000 - 50,000	13	448,700	19.2
Under 25,000	90	942,600	40.4
TOTAL	114	2.333,100	100.0

Note: Estimated from the data obtained from the Alberta Broiler Growers' Marketing Board.

Table 6-11

COMPOSITE MARKET SHARE FOR THE BROILER INDUSTRY, 1968

ALBERTA

Firm	Share of Total Output			
	Hatcheries	Broiler Production	Feed Manufacturing	Processing
A-B	79	37	--	81
D	--	--	40	--
C	--	7	15	16
E	10	--	8	3
3 Independent Hatcheries	11	--	--	--
94 Independent Producers	--	56	--	--
4 Independent Feed Companies	--	--	37	--
TOTAL	100%	100%	100%	100%

Source: R. R. Hurnanen, M. H. Hawkins and T. W. Manning, *Vertical Integration and Concentration in the Alberta Broiler Industry*, Research Bulletin No. 8 (Edmonton: Dept. of Agricultural Economics and Rural Sociology, University of Alberta, 1970).

The analysis as undertaken suggests that the quota policies of the Alberta Broiler Growers' Marketing Board changed the structure of the broiler industry in the province towards more concentration in both broiler production and processing.

Effect on Supplies and Trade Position of the Province

For the first four quota periods, the Board authorized crop quotas of 90 percent, 100 percent, 105 percent and 110 percent, respectively, of the basic quota (Appendix G). The crop quotas in the third and fourth quota periods were met by the Board issuing temporary production permits. Despite the Board's attempts to maintain an adequate supply of broiler chickens to meet the demand on an average weekly basis, there had been some unevenness of weekly supplies.

The initial estimate of the Board's supply management had been to increase supply at a level commensurate with increased demand. As such, the role of price in demand analysis was essentially ignored. There were no expectations formulated regarding the changes in the quantity demanded due to price changes because the assumed objective of setting marketing quotas was to keep price constant.

The Board has been using "trend line formulas" which, in essence, took the historical pattern of sales and projected them into the future. Projections were then made into the future in terms of annual demand on the basis of past growth rate and also the future sales were broken down into shorter periods, i.e., quarters or 13-week periods. This method could be improved by considering demand changes occurring through population changes, incomes, seasonality of demand, and changes in the prices of competitive products to be used in the analysis of supply decisions. Econometric results of the analysis presented in this research can be used to generalize the behavior of demand and supply structural variables pertaining to the Province of Alberta.

Alberta had traditionally been a net exporter of broiler chicken before 1967. Table 6-12 provides monthly and yearly exports and imports for January, 1965 to December, 1969. Being a net exporter of 768,000 lbs. and 243,000 pounds of broilers in 1965 and 1966, the province showed net imports of 17,000 pounds in 1967 which increased substantially to 3,306,000 pounds in 1969.

Estimated coefficients of trade position for Alberta for the 1961-1970 period suggest a similar pattern--that Alberta became an increasingly deficit province during 1967, 1968 and 1969. Trade position improved slightly in 1970 but Alberta still remained a deficit area and im-

Table 6-12

NET EXPORTS OF ALBERTA BROILERS, JANUARY 1965--DECEMBER 1969 (NET EXPORTS = EXPORTS - IMPORTS)

Month	Year				
	1965	1966	1967	1968	1969
			('000 obs.)		
January	107.	65	117	-31	-117
February	118	51	-93	-18	-291
March	0	-55	-111	103	-177
April	35	23	-41	37	-49
May	38	-15	35	-26	-275
June	88	-29	162	123	-729
July	87	-127	-142	6	-545
August	49	-244	-135	-110	-181
September	43	12	106	98	-99
October	46	153	-1	-105	-341
November	89	84	48	-145	-277
December	68	135	38	-113	-166
TOTAL	768	243	-17	-181	-3,306

Source: Alberta Broilers Growers' Marketing Board, "Records of Imports and Exports," Edmonton, 1965-1969. (Unpublished.)

ported broilers from other provinces.[1] (See Table 6-13.) It may be noticed from Table 6-13 that during 1967-69, the trade position coefficient was less than 1. This might be attributed to the Board's supply management policies that could be characterized as restrictive. Considering a more expansionary aspect, it might have generated good economic returns to all groups, such as hatcheries, producers, processors, etc., in the province.[2]

Effect on Prices

Since the Board had little jurisdiction over the inflow of broiler chickens from alternative sources of supply, the Board had problems in its attempt at sta-

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[1] Imports of broilers from the United States were not forthcoming because of the existing product differentiation and somewhat different processing standards. U.S. broilers had a yellowish skin and were not eviscerated. Most of it sold only dressed which did not meet with good consumer acceptance in Canadian supermarkets. Quebec had been the main supplier of broilers to Western as well as Eastern provinces.

[2] The multiplier effect of the extra income generated through increased use of Alberta's resources in fulfilling local demand through local production rather than imports must be considered. Loss of feed resource use alone from 3.3 million pounds of imports is estimated to be 5,500 tons. Given lower consumer prices for broilers and an even balance of imports and exports, the estimated increase in Alberta broiler production of 6 million pounds would have used an additional 7,800 tons of local feed grains. R. R. Hurnanen, M. H. Hawkins, and T. W. Manning, *Vertical Integration and Concentration in the Alberta Broiler Industry,* Research Bulletin No. 8, (Edmonton: Dept. of Agricultural Economics and Rural Sociology, University of Alberta, 1970).

Table 6-13

COEFFICIENTS OF BROILER TRADE POSITION, ALBERTA 1961--1970

Year	Broiler Trade Position Coefficients[1]
1961	1.11
1962	1.24
1963	1.36
1964	1.39
1965	1.21
1966	1.10
1967	0.99
1968	0.96
1969	0.91
1970	0.97
Average 1961--1970	1.12

[1] Trade position coefficients estimated as per capita broiler production : per capita broiler consumption.

Source of per capita broiler production and per capita broiler consumption: Canada Department of Agriculture, *Poultry Market Review* (Ottawa: Production and Marketing Branch, CDA, 1961-1969).

bilizing supply. Where these inflows had been substantial in relation to local supply, they affected the level of prices.

With a view to finding how successful the Board had been in achieving stability of prices, weekly price data for broilers at both the producer level and the wholesale level were analysed. Table 6-14 provides the estimates of price stability at producer level and at wholesale level. It indicates that the Board had been successful in reducing price fluctuations in relative terms.

The Board started its operation in September, 1966 and it is indicated that price fluctuations in the post-board period have been reduced (as shown by the standard deviation estimates). For the pre-board period, the estimated standard deviation for the weekly price data was 2.1 which declined to 1.0 in the post-board period. Range, though not an appropriate measure of dispersion for samples greater than 10, provides corroboration of the conclusion drawn from the standard deviation estimate (being 8.0 for the pre-board period and 3.5 for the post-board period). The mean estimate, however, shows that price stability was achieved at a higher average price, though the lower maximum producer's price was recorded in the post-board period at the producers' level.[1]

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[1] Although average price during the post-board period remained high, the increase was not substantial at the producer level. This increase in producers' minimum price can be justified by increase in cost of broiler production.

Table 6-14

WEEKLY PRICE DATA FOR BROILERS AND RELEVANT STATISTICAL ESTIMATES OF PRICE STABILITY
ALBERTA
1961-69

	Producers' Level		Wholesale Level	
	Pre Board	Post-Board	Pre-Board	Post-Board
Sample Size	184	287	61	287
Maximum (price)	24.0	23.0	61.0	47.0
Minimum (price)	17.0	19.5	19.0	37.0
Range	7.0	3.5	22.0	10.0
Mean (price)	20.8	21.41	38.1	40.9
Variance	4.5	1.0	23.5	6.7
Standard Deviation	2.1	1.0	4.8	2.5
Mean Deviation	1.8	0.85	2.7	2.2
Median (price)	21.0	21.51	40.0	41.0
Mode (price)	18.0	22.50	40.0	39.0

Estimates from weekly broiler price data.

Source: Canada Department of Agriculture, *Poultry Market Review* (Ottawa: CDA, 1961-69).

Effects on Wholesale Prices and Producer-to-Wholesale Margin

Similarly, at the wholesale (processors) level the Board's quota policy contributed to a higher price stability (standard deviation dropping from 4.8 in pre-board period to 2.5 in the post-board period). Mean prices in both the pre-board and post-board period at the wholesale level had been almost double that of the producers' level. This suggests that higher broiler prices at the wholesale level could not be attributed to fixation of higher prices to producers.

Absolute Producer-to-wholesale margins on the mean seemed to have been substantial. Justification for the large producer-to-wholesale margins could be interpreted as being caused by increasing processing and storage costs, labor costs and the cost of credit that processors have to continually incur during the production process.

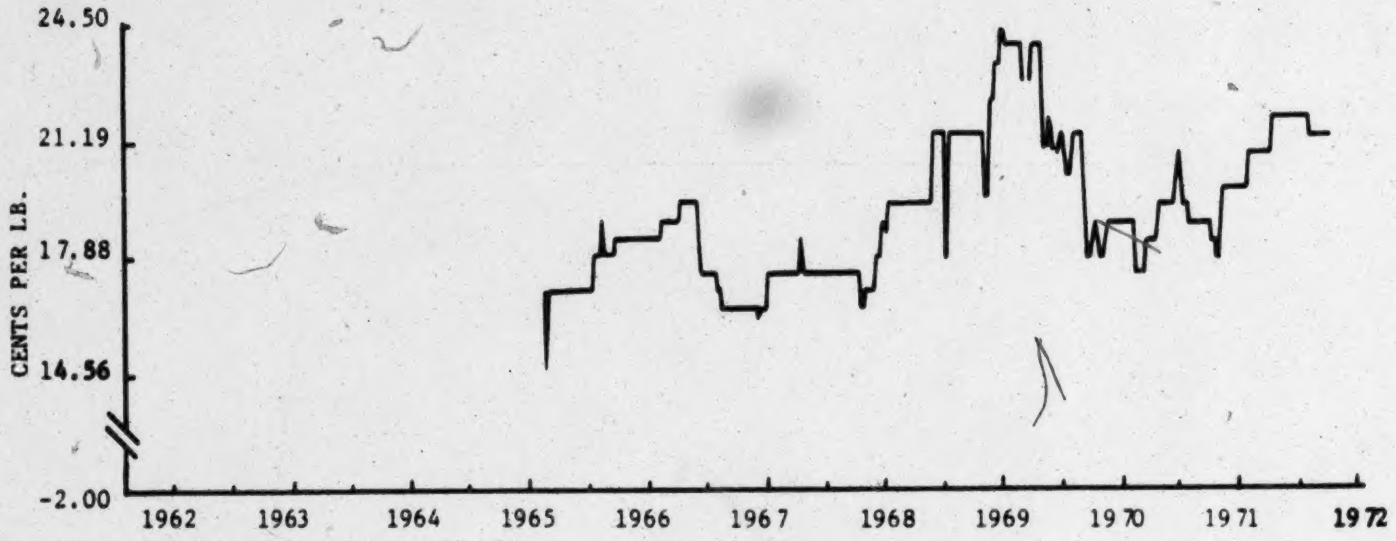
Figure 6-10 gives the plot of the producer-wholesale margin, indicating a fair degree of stability achieved at a high level of wholesale prices that could be regarded mainly as "cost-determined".

Summary

The Alberta Broiler Growers' Marketing Board was established in 1966 and on October 31 of that year, a total basic quota of 1.918 million square feet of floor space was authorized by the Board. By the end of 1970, the

FIGURE 6-10

PRODUCER-TO-WHOLESALE MARGINS, EDMONTON



board authorized 2.260 million square feet of production space (with 2.252 million square feet already built).

Keeping in view the objectives of the Board, an evaluation of the implementation of its quota policies revealed the following conclusions:

(1) Effects of the quota policies as used by the Alberta Broiler Growers' Marketing Board probably have been conducive to the development of a concentrated broiler industry. Of the total 105 broiler growers in Alberta in 1969, 94 were independent growers and 11 were parts of vertically integrated farms. The 11 integrated farms were by far the largest (average size being 84,800 square feet compared with an average size of 12,800 square feet for independent growers). As the data suggested, three integrated firms controlled 44.0 percent of the total allotment and the remaining 56.0 percent was controlled by the rest. Among the independent growers, the largest size was 75,000 square feet.

(2) Despite the Board's attempts to maintain an adequate supply of broiler chickens to meet demand on an average weekly basis, there had been some unevenness of weekly supplies. The Board needed more sophisticated demand estimates than the "trend line formulas" used.

(3) Estimated coefficients of trade position for the province for 1961-70 period suggested that Alberta became an increasingly deficit province after 1967 and, although the deficit position improved slightly in 1970,

there were still imports coming into Alberta from other provinces.

(4) With no jurisdiction over the inflow of broiler chicken from alternative sources of supply, the provincial broiler board faced some problems in its attempts to stabilize supplies and prices. Despite these limitations, the quota policies of the Board were effective in achieving price stability both at the producer level and the wholesale level.

(5) Mean prices at both producer and wholesale levels were higher during the post-board period. The level of post-board prices at the wholesale level remained much higher than at the producer level. The higher prices at both levels, however, could be justified in terms of increasing cost of broiler production in Alberta.

(6) Producer-to-wholesale margins in the Alberta broiler industry were stabilized but at a higher level, suggesting that wholesale broiler prices increased faster than broiler prices at the producer level. The large producer-to-wholesale margins could be justified because the processing and storage costs in the broiler industry increased substantially during the 1965-70 period.

(7) Alberta broiler growers have achieved production efficiency, a major consideration in broiler production today. This efficiency has been achieved under severe pressure exerted on the broiler chicken industry

by competition from other provinces as well as by turkey meat, red meats and other general market trends.

The Ontario Broiler Chicken Producers' Marketing Board

General Background

Broiler chickens have been the largest single component of Ontario poultry marketing. Broilers accounted for approximately 67.1 percent of all poultry meats produced in Ontario during the 1965-69 period and 64.0 percent during the 1965-70 period. Average yearly receipts from marketings of broilers in Ontario amounted to roughly $50.0 million in the 1960-70 period.[1]

In 1960, 101 million pounds (eviscerated weight) of broiler meat were marketed in Ontario. By 1965, total Ontario broiler production was around 136 million pounds. Uncontrolled expansion in broiler production[2] during the early 1960's was accompanied by extreme price instability, in spite of attempts by a voluntary price committee to improve prices in 1962. Low prices in 1959-62 (Figure

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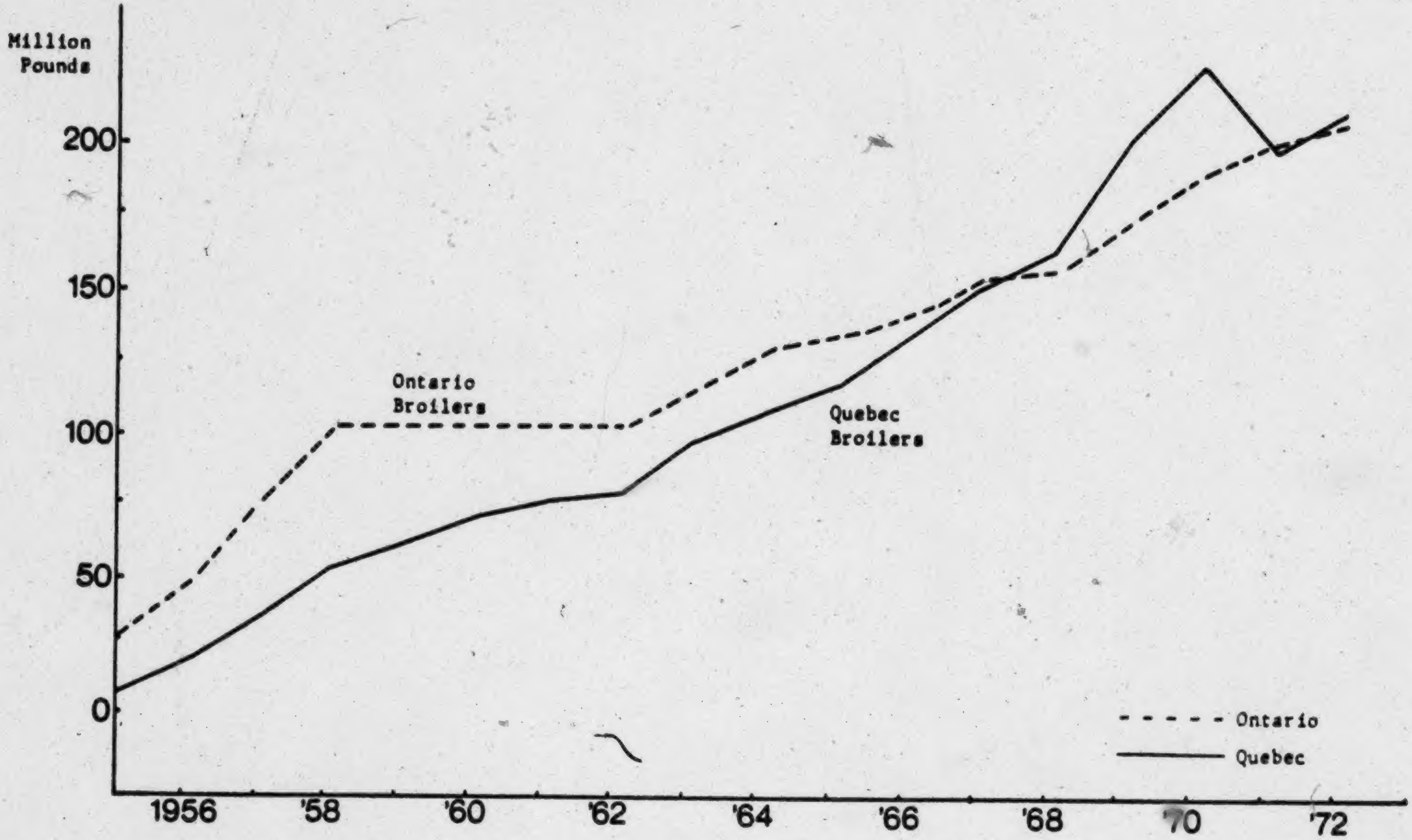
[1] The gross return from broilers in Ontario was $29.731 million in 1964, $33.299 million in 1965, $38.394 million in 1966, $43,584 million in 1967, $46.699 million in 1968, and $49,924 million in 1969. The gross return from broilers increased to over $51.4 million in 1970, to $55.0 million in 1971, and is approximately $58.0 million in 1972. Source: The Ontario Chicken Producers' Marketing Board, *Annual Repcrt*, 1972.

[2] Figure 6-11 depicts the growth in Ontario chicken broiler production as compared to Quebec broiler production for the 1956-72 period.

FIGURE 6-11

BROILERS SLAUGHTERED IN REGISTERED PLANTS IN ONTARIO AND QUEBEC, 1955-72



Source: Canada Department of Agriculture. Poultry Market Review, 1955-72.

6-12) were of great concern to the farmers and led to agitation by the broiler producers for some measure of supply control, price improvement and stability. As a result of this agitation, the Ontario Chicken Broiler Producers' Marketing Board was granted powers to control marketings through marketing quotas and the plan was implemented in March, 1964.

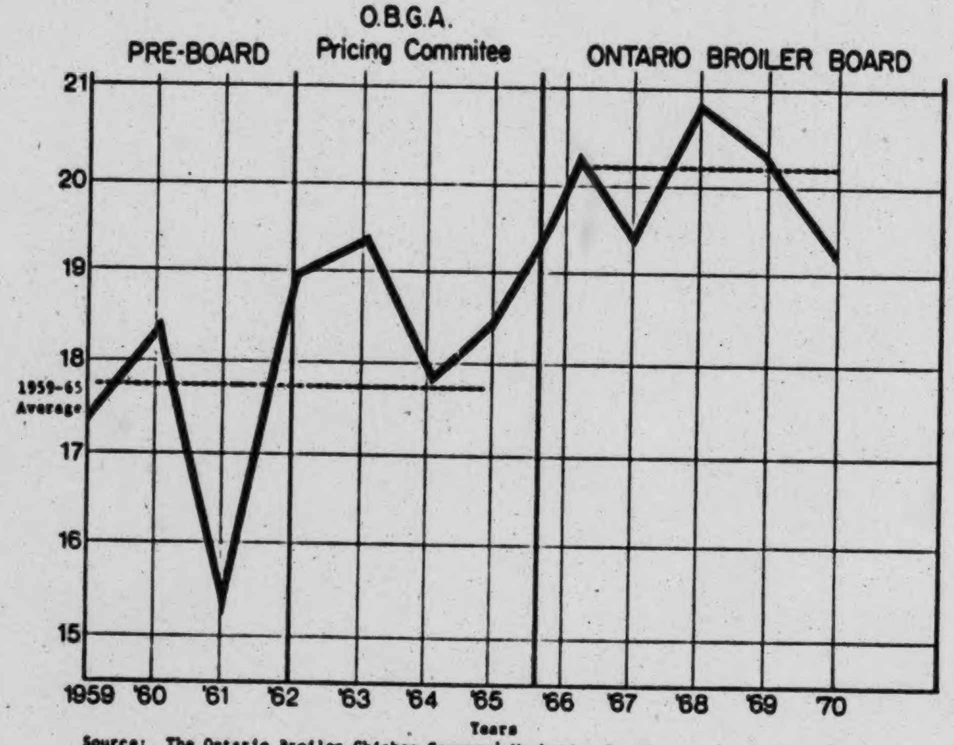
Powers of The Board

Since this marketing plan was fashioned after the one adopted in British Columbia, the mechanisms for allocating basic quotas were the same in the two provinces. Some of the major differences regarding the ownership and transferability of quotas and the method of establishing quotas for the quota period have been outlined previously in Table 6-3.

Though the British Columbia Marketing Board met with representatives of the trade each week in order to discuss supply and farm prices, it was the Board's responsibility to set quotas and prices. In Ontario, however, a Broiler Chicken Industry Quota Advisory Committee was established. The chairman was appointed by the Ontario Farm Products Marketing Board; four members were appointed by the Ontario Broiler Chicken Producers' Marketing Board, two were appointed by the Ontario Poultry Processors' Association, one was appointed by the Ontario Division of the Canadian Feed Manufacturers' Association, and one by the Ontario Hatcheries Association. The term of office

FIGURE 6-12

ANNUAL LIVEWEIGHT PRICES RECEIVED BY CHICKEN PRODUCERS, 1959-70
ONTARIO



Source: The Ontario Broiler Chicken Growers' Marketing Board.

for members of the Advisory Committee was one year. The main function of this Advisory Committee was to recommend to the Ontario Broiler Chicken Producers' Marketing Board total quotas for broiler chickens or any class, variety, grade or size of broiler chicken for any period or periods of time not exceeding one year. Upon receipt of these recommendations, the Broiler Board was required under the marketing plan to provide the Ontario Farm Products Marketing Board with full particulars of any recommendations made to it by the Broiler Chicken Industry Quota Advisory Committee and to take any subsequent action with regard to these recommendations.

With regard to the establishment of farm prices, until recently there was an agency known as the Negotiating Committee on Prices for Broiler Chickens. It was composed of five members: two appointed by the Broiler Board, two by the Ontario Poultry Processors' Association, and one by the Ontario Farm Products Marketing Board. The last-named appointed member was to be the chairman of the Negotiating Committee on Prices for Broiler Chickens. This Committee had the power to adopt or settle by agreement minimum prices for broiler chickens or for any class, variety, grade or size of broiler chickens. In its deliberations regarding the establishment of prices, the Committee examined the prices that prevailed in Quebec, Manitoba and the United States before setting a price for the Province of Ontario. Whenever the Committee failed to agree on a price, the chairman of this Committee was then authorized to set a price for the particular week in question. However, the Board was authorized to fix prices in 1969 and has done so since that time.

In addition, initally there was a Negotiating Committee on Agreements for Broiler Chickens, which was empowered to adopt or settle by agreement (a) terms, conditions and forms of agreement relating to the producing or marketing of broiler chickens; (b) any charges, costs or expenses relating to the production or marketing of broiler chickens. Furthermore, if a quorum of the Negotiating Committee on Agreements for Broiler Chickens was not present within one hour of the time for which the meeting was called, or where 'q' quorum was present and the Committee did not arrive at agreements respecting all matters within two hours of the time for which the meeting was called, the matters in dispute were to be determined by a Board of Arbitration.

Evaluation of the Quota Policies of the Ontario Broiler Chicken Producers' Marketing Board

Effects on the Broiler Industry and Concentration

Apart from the quotas allotted at the inception of the Board in 1965, no new quotas were allotted until 1969 (Table 6-16). However, expansion had to be considered by the Board whenever demand warranted it. Expansion required the allocation of new quotas and/or increases in the quotas already held by registered growers. In 1969 the Board proposed an expansion by issuing two-thirds of the total new quotas to growers established under the Board, and one-third of the total to new growers who would be admitted into the industry. The proportion of new quotas issued to growers already established with the Board was designed to increase the volume of business handled by smaller growers whose size of business was considered inadequate for economic viability.

The primary goals of the Ontario Broiler Marketing Board were to effectively organize the production to market demand and to curb corporate takeover of the broiler industry. Data in Table 6-15 illustrates that by 1970 the Board had succeeded in placing producers in different categories, the largest number of producers being in the category of 4,000-30,000 birds. Only 42, or 5.6 percent, of producers had a production capacity of 50,000 and over.

An increase in integration did not occur in the Ontario broiler industry after the quota system was set up. Integration appeared to be limited by the norms regulating quota transfers. Quota transfers were only permitted from one producer to another producer to a maximum of 35,000 birds; that is, no one with a quota for more than 35,000 birds could buy additional quotas. Since most integrators already had operations exceeding 35,000 birds, the opportunity for increased integration through trans-

Table 5-15

DISTRIBUTION OF PRODUCERS ACCORDING TO QUOTA SIZE CATEGORIES

ONTARIO
1970

Number of Birds-Quota Size Category	Total Producers	% of the Total Number
Under 5,000	66	8.9
5,000 - 10,000	173	23.4
10,000 - 15,000	129	17.5
15,000 - 20,000	95	12.8
20,000 - 30,000	140	18.9
30,000 - 40,000	72	9.7
40,000 - 50,000	23	3.1
50,000 and over	42	5.7
TOTAL	740	100.0

Source: Estimates from the list of broiler quota holders in Ontario for 1970.

TABLE 6-16

RESULTS OF PLANNED MARKETING OF BROILER CHICKENS
SEPTEMBER 1965--DECEMBER 1972
ONTARIO

Total Processed	Increase Over Prev.Yr.	Quota Period	Recommended Total Quota	Crop Quota	Excess Capacity in Broiler Ind.
12,221,471	+5.6%	Sept-Dec 1965	11,869	90%	+10%
10,828,686	+5.5%	Dec-Mar 1966	10,725	80%	+20%
11,920,725	-1.25%	Mar-Jun 1966	12,585	87%	+13%
13,951,618	+7.4%	Jun-Sept 1966	14,000	100%	+0
13,108,706	+7.3%	Sept-Dec 1966	12,950	90%	+10%
12,070,341	+11.5%	Dec-Mar 1967	11,369	82%	+18%
12,791,741	+7.3%	Mar-Jun 1967	13,130	93%	+ 7%
14,382,142	+3.1%	Jun-Sept 1967	14,500	100%	0
13,408,167	+2.[illegible]	Sept-Dec 1967	12,574	85%	+15%
11,390,766	-5.6%	Dec-Mar 1968	10,750	77%	+23%
13,145,418	+2.7%	Mar-Jun 1968	12,792	90%	+10%
14,910,745	+3.5%	Jun-Sept 1968	15,225	100%	0
14,556,744	+8.5%	Sept-Dec 1968	13,500	95%	+ 7%
13,053,848	+18.0%	Dec-Mar 1969	12,800	85%	+15%
14,587,168	+13.96%	Mar-Jun 1969	14,000	95%	+ 5%
14,386,880	+6.5%	Jun-Sept 1969	15,000	100%	0
15,759,929	-	Sept-Nov 1969	16,200	97%	+ 3%
14,221,089	+8.9%	Nov-Feb 1970	14,500	90%	+10%
14,808,000	+10.0%	Feb-May 1970	14,808	90%	+10%
17,400,000	+20.0%	May-Aug 1970	17,400	100%	0
17,400,000	-	Aug-Oct 1970	17,400	100%	0
14,862,000	-	Nov-Jan 1971	14,800	95%	+ 5%
15,147,583	+7.2%	Jan-Apr 1971	15,600	100%	+0
15,147,583	+8.3%	Oct-Jan 1972	15,034	100%	+0
14,416,112	-5.8%	Jan-Apr 1972	14,700	90%	+10%
15,788,790	-1.3%	Apr-Jun 1972	15,600	94%	+ 6%
16,661,451	+12.6%	Sept-Dec 1972	16,500	100%	+0

Source: The Ontario Chicken Producers' Marketing Board, Annual Reports, 1966-72.

fer of quota rights was minimal.

Moreover, the Board placed a limit on the sale of premises with attached quotas and did not approve transfers where the total combined basic quota of the transferee (an individual or a corporation) exceeded 150,000 broiler chickens. When the Ontario Broiler Chicken Marketing Board instituted its quota system in 1965, integrated broiler operations (hatchery-feed manufacturing, poultry processing, etc.) held about 17.0 percent of the quotas. In 1971, direct production of broilers by non-farm firms was reduced to 12.6 percent of the basic quota. With a basic quota of 15.212 million birds in 1971, six firms (of which four were completely integrated) held 1.230 million birds (8.1 percent of the total) and were in the category of hatchery, feed manufacturing and poultry processing (integrated) and 691,452 birds were held by five other firms (4.5% of the total) in the category of harchery or feed manufacturing (non-integrated). This made the total non-farm firm's involvement in Ontario broiler production equal to 1.921 million birds (12.6 percent of the total basic quota of 15,211,557 birds for Ontario).

Contrary to what occurred in the primary broiler sector,[1] there has been a high degree of concentration and integration at the feed manufacturing, poultry processing and hatcheries levels. Certain undesirable practices have been alleged to have existed in these segments of the broiler industry in Ontario: (1) producers compelled to buy feed and chicks from companies which were also processors--if not, the companies refused to process the broilers, (2) providing mortgage financing for broiler growing facilities, obligating the producers to buy feed and chicks as a condition of the mortgage for a number of years. Pro-

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[1] Number and proportion of the non-farm firms involved in broiler production in Ontario was reduced substantially. In 1971, only 12.6 percent of the total broiler chicken output was produced by non-farm firms, the remaining 87.4 percent was produced by farming groups. This can be ascertained from the following estimates.

Number and Proportion of Non-Farm Firms Involved in Broiler Production (Ontario) 1971

Activities	Number of Firms	Quota No. of Birds	Quota Percent
Hatchery-Feed Manufacturing Poultry Processing (Integrated)[1]	6	1,229,737	8.1
Hatchery or Feed Manufacturing (non-integrated)	5	691,452	4.5
TOTAL	11	1,921,189	12.6
Basic Quota		15,211,557	100.0

[1] Four firms out of six are completely integrated as they are engaged in all these activities.

ducers found themselves in a profit squeeze due to high costs when involved in such contracts. The Board had no power to intervene because these cases were not specified in the marketing legislation which enabled the Board to operate.

Producer Concentration Level

Results of estimated concentration in the Ontario broiler industry are given in Table 6-15. With 740 producers in 1970, the largest proportion of broiler growers was located in the 5,000-10,000 category (23.4 percent). The next largest category was 20,000-30,000 birds with 18.9 percent of total producers. The category 10,000-15,000 birds had 129 producers, constituting 17.5 percent of the total number of Ontario broiler growers. Almost one-fifth (18.5 percent of the total producers were concentrated in the 30,000 and above category with only 42 growers (5.7 percent in the 50,000 and over group).

The estimates indicated that the Ontario broiler industry was fairly concentrated (Table 6-15), with 740 broiler growers producing over 35.0 percent of the total Canadian broiler supplies.

Effects on Capitalization

The fact that quotas were attached to registered premises, as well as the restricted entry into the industry, provided the opportunity for capitalization of quota rights into the value of real estate. The valuation placed on quota rights in Ontario had been estimated to be about $3.00 per square foot in 1969. The incidence of capitalization can be imagined to have reflected increases in production costs and, consequently, higher consumer prices for broiler chickens. The cumulative effect of this could be to impair the competitive strength of broiler chickens vis-a-vis competing products.

Effects on Supplies and Trade Position of the Province

Since its inception in 1965, the Ontario Broiler Chicken Producers' Marketing Board had in general been reasonably successful in stabilizing the supply of broiler chickens marketed in Ontario. The total quantity of broiler chickens marketed in Ontario changed very slightly from 12.2 million birds in September-December 1965 to 12.7 million birds in March-June 1967. With slight fluctuations, however, the number of chickens marketed under quota increased after the March-June 1967 period and was 16.2 million birds in September-December 1969. It fluctuated around this size with the highest production period being August-October 1970 with 17.4 million birds produced. It dropped to 16.5 million lbs. in the September 17-December 22, 1972 period (Table 6-16 and Table 6-17).

Through 1965-70, the allocation of quotas for broiler marketing in Ontario generated the various levels of excess capacity in the industry, the highest level being

Table 6-17

INDICES SEPTEMBER-DECEMBER, 1965 = 100, RECOMMENDED QUOTAS AND ONTARIO TOTAL MARKETED OR PROCESSED

Period	Recommended Quotas	Total Marketed or Processed
Sept. - Dec. 1965	100.0	100.0
Dec. - March 1966	90.4	88.6
March - June 1966	106.0	97.4
June - Sept. 1966	118.0	114.3
Sept. - Dec. 1966	109.1	107.6
Dec. - March 1967	95.8	98.8
March - June 1967	110.6	104.7
June - Sept. 1967	122.2	117.7
Sept. - Dec. 1967	105.9	109.7
Dec. - March 1968	90.6	93.2
March - June 1968	107.8	107.6
June - Sept. 1968	123.8	122.0
Sept. - Dec. 1968	113.7	119.1
Dec. - March 1969	107.8	111.7
March - June 1969	118.0	119.4
June - Sept. 1969	124.4	120.5
Sept. - Dec. 1969	134.8	132.7
Nov. - Feb. 1970	122.2	116.4
Feb. - May 1970	124.8	128.9
May - Aug. 1970	146.6	131.8
Aug. - Oct. 1970	146.6	131.8
Nov. 1 - Jan. 23 1971	124.7	121.6
Jan. 24 - April 17 1971	131.4	123.9
April 18 - July 10 1971	140.4	132.6
July 11 - Oct. 2 1971	130.2	129.7
Oct. 3 - Jan. 8 1972	151.9	148.0
Jan. 9 - April 1 1972	123.9	118.0
April 2 - June 24 1972	131.4	129.2
Sept. 12 - Dec. 9 1972	139.0	136.3

Source: Estimates from data furnished by: Ontario Broiler Chicken Producers' Marketing Board, *Fifth Annual Report*, 1969.

in December-March, 1968 when the overall broiler industry experienced 23.0 percent excess capacity (Table 6-16). Only eight times in the period under study were 100.0 percent crop quotas allowed. The seasonal pattern illustrated that the June-September months were when the demand for broilers was highest. The lowest level of quotas had been during the December-March period. The low quota allocation corresponded to the low seasonal demand for broilers in Ontario.

The coefficients of broiler trade position (Table 6-18) were estimated for Ontario for the 1961-70 period, showing that Ontario enjoyed a surplus trade position until 1968. From 1969 onward, Ontario became a deficit province. Quebec, with a lack of effective control in broiler production, always had producers' prices which were lower than Ontario and the Western provinces (averaging about 2¢/lb. below the live price paid to producers in Canada). Figure 6-13 shows the price differential for Quebec, Ontario and Manitoba and suggests economic reasons for imports from Quebec into Ontario and Manitoba.

The lack of legal authority to restrict the substantial inflows of broiler chickens from Quebec and Manitoba into markets in Ontario impaired the effectiveness of the quota policy of the Ontario Broiler Chicken Producers' Marketing Board in maintaining stability of supply and prices. In fact, the increase of shipments of Quebec broilers into the lucrative Toronto market had been of serious concern to the Board.[1] Whereas these interprovincial flows and movements of broiler chickens might have some destabilizing effects on the industry in Ontario in the short-run, this was of some benefit to the industry in the long run. Certainly, it forced the Ontario growers into improving their competitive strength if they wanted to maintain their markets.

The policy of allotting fixed basic quotas, regardless of whether or not they were fully employed, brought more resources than were necessary into the broiler chicken industry. Moreover, the policy of fixing annual crop quotas on a percentage of the fixed basic quotas sustained substantial excess capacity in the Ontario broiler industry (Table 6-16). In fact, during the short period of September-December 1965 to September-August 1970, empirical estimates suggest that there existed an excess capacity of varying range. Excess capacity reaching a high of 23 percent in the December-March 1968 period.

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[1] By way of illustration, on April 7, 1966, the Ontario Broiler Chicken Producers' Marketing Board marketed approximately 900 thousand birds (about 4 pounds each) at 21.25 cents per pound. Gross revenue was, therefore equal to $765 thousand. To be able to compete with Quebec broilers, the Board would have had to market at 18 cents per pound. Since the Ottawa Valley consumed some 100 thousand birds, the loss of income to growers would have been $13 million (100,000 × 4 × 3.25 = $13.0 million). Broiler chickens produced in Manitoba have also entered in the northwestern markets of Ontario.

Table 6-18

COEFFICIENTS OF BROILER TRADE POSITION
ONTARIO, ALBERTA AND BRITISH COLUMBIA
1961-1970

Year	Broiler Trade Position Coefficients[1]		
	Ontario	Alberta	British Columbia
1961	1.14	1.11	0.98
1962	1.08	1.24	0.96
1963	1.11	1.35	1.02
1964	1.08	1.39	0.86
1965	1.06	1.21	0.82
1966	1.01	1.10	0.78
1967	1.00	0.99	0.72
1968	1.02	0.96	0.71
1969	0.98	0.91	0.70
1970	0.92	0.97	0.68
Average 1961-1970	1.04	1.12	0.92

[1] Trade position coefficients estimated as per capita broiler production-per capita broiler consumption.

Source of per capita broiler production and per capita consumption: Canada Department of Agriculture, *Poultry Market Review* (Ottawa: Production and Marketing Branch, CDA, 1961-1969).

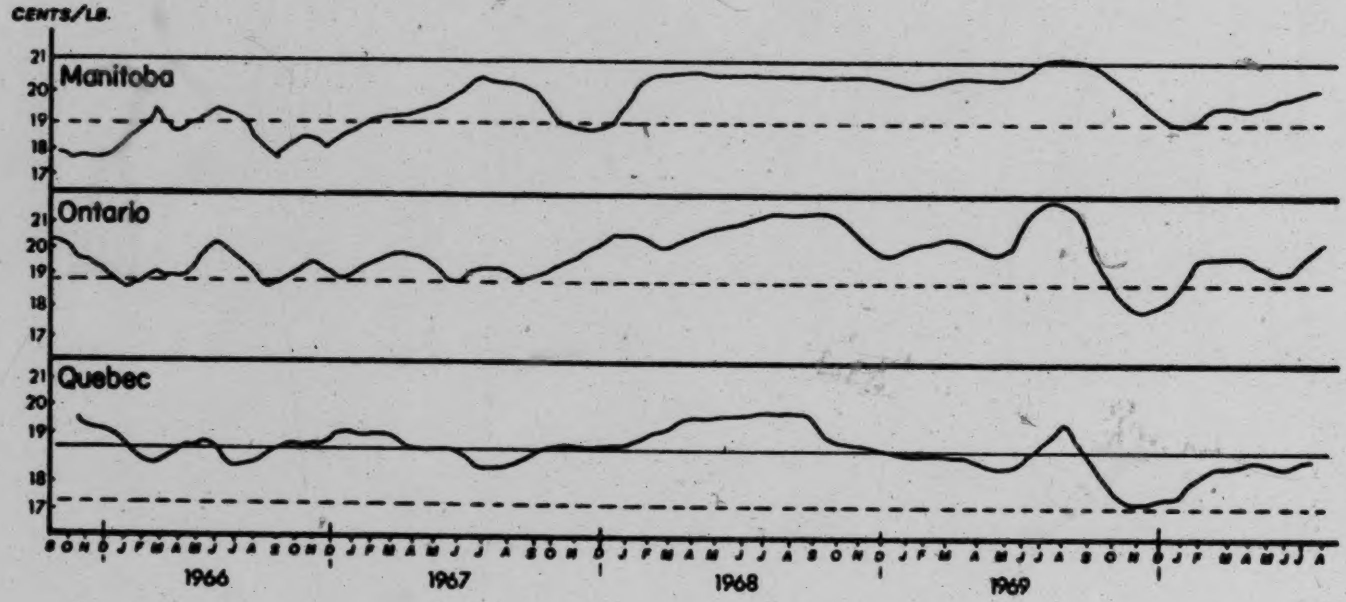
It seems illogical to sustain excess capacity in these varying ranges since, in the following year, Ontario was again a deficit province as far as chicken broilers were concerned. The estimates on per capita consumption of broiler meat suggest that there were gradual increases in broiler consumption which did not justify excess capacity in the industry in order to sustain and cause higher prices to the consumer. It was logical to conclude that the impact of the supply management pursued by the Ontario Broiler Chicken Producers' Marketing Board had been to bring about persistent unemployment of a considerable proportion of the resources retained in the broiler industry. This represented a costly utilization of resources in that total overhead costs had to be paid even though some proportion of these resources had remained unused in any one period. In turn, this must be reflected in higher production costs and prices for broiler chickens, the cumulative effects of which would be to impair the competitive position of broiler chicken vis-a-vis their substitutes.

Effects on Prices

Estimates of price stability for the pre-board and post-board period indicate that the quota policies of the Ontario Broiler Chicken Marketing Board had been successful in stabilizing the broiler prices at the producers' level. The standard deviation estimated dropped from 1.22 in the pre-board period to 1.09 in the post-board period (Table 6-19).

FIGURE 6-13

LIVE BROILER PRICES
A THREE-PROVINCE COMPARISON OF PRICES
SEPTEMBER 1965--AUGUST 1970



Manitoba and Ontario prices represent farm prices and Quebec prices are plant prices.

Table 6-19

WEEKLY PRICE DATA FOR BROILER AND RELEVANT STATISTICAL ESTIMATES OF PRICE STABILITY
ONTARIO
1961-69

	Producers' Level		Wholesale Level
	Pre-Board	Post-Board	Post-Board
Sample Size	170	354	343
Maximum (price)	21.0	22.0	42.0
Minimum (price)	16.0	16.0	30.0
Range	5.0	6.0	12.0
Mean (price)	18.51	20.12	36.8
Variance	1.49	1.19	5.4
Standard Deviation	1.22	1.09	2.3
Mean Deviation	1.03	0.86	1.9
Median (price)	19.0	20.0	37.0
Mode (price)	19.0	20.0	37.0

Estimates from weekly broiler price data.

Source: Canada Department of Agriculture, *Poultry Market Review* (Ottawa: CDA, 1961-69).

After supply control was introduced, broiler prices averaged well above the pre-board levels (Figure 6-12). Estimates show that the average range between the lowest and the highest prices in 1967-70 was 2.3 cents, compared with 6.3 cents in 1959-62. Estimates of standard deviation, as further analyzed, show that weekly price changes of more than one cent declined from an average of four cents per year in 1959-62 to an average of one cent per year in 1967-69.[1]

Effects on Margins

Weekly broiler price data at two cities were used to study wholesale-to-producer margins. Figure 6-14 shows the margins for 1965-72 period. Wide fluctuations in margins can be seen on the plot of weekly price data. Though the range of fluctuations has not been large the absolute changes in margins can be evidenced for both short periods as well as over time. In very few instances, short-run stability could be maintained. This seems to be a normal condition, especially under the determining interprovincial flows of broilers from Quebec and Manitoba which affected the weekly prices. Figure 6-14 suggests the Board's ineffectiveness in stabilizing the margins at a low level.

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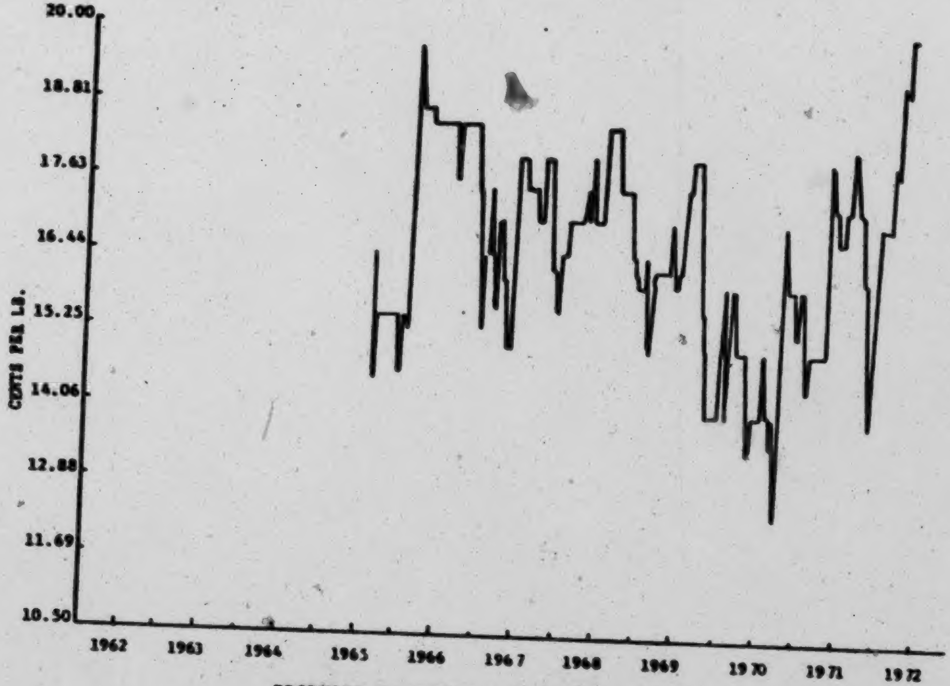
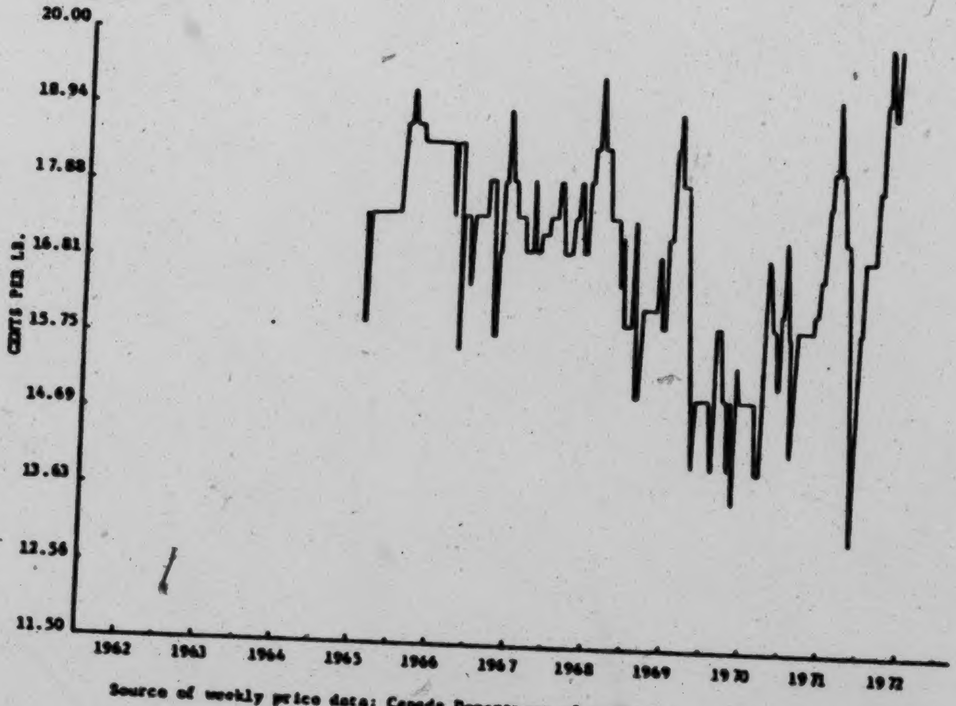
[1] Quota policies of the board, however, had their effect in keeping the producer prices at a higher level. In the pre-board period the average producer's price was 18.51¢ per pound; this increased to 20.12¢ per pound in the post-board period. This increase in prices of broiler chickens at the producer level in Ontario could be justified by the increasing cost of broiler production.

FIGURE 6-14

PRODUCER-TO-WHOLESALE MARGINS, BROILERS, LONDON



PRODUCER-TO-WHOLESALE MARGINS, BROILERS, TORONTO



Source of weekly price data: Canada Department of Agriculture. Poultry Market Report (weekly 1965-72)

For comparative purposes, the Montreal prices at the producer and wholesale level were analyzed and margins were estimated between these two levels. Figure 6-15 suggests a lesser variation in the margins and also a lower level for the 1963-72 period compared to Ontario. A similar test made for Manitoba prices at Winnipeg suggested that there has been a relatively greater degree of success in reducing flucturations in margins between the wholesale-to-producer level, even though the margins remained high (Figure 6-16).

Effects on Income

With the establishment of the Ontario Broiler Chicken Producers' Marketing Board in April, 1966, the number of birds marketed rose from 47.9 million in 1965 to 50.8 million in 1966. Average farm prices also increased from 18.6 cents per pound (live weight) to 20.5 cents in 1966, an increase of almost 2 cents. Consequently, there was a rise in gross income from $33 million in 1965 to $39.6 million in 1966, an increase of 20 percent. Thus, the effect of the quota and pricing policies of the Board had been to create a substantial rise in gross income from live sales within a year of the Board's operation.

Further incremental behavior of gross income from broiler sales in Ontario can be witnessed in Table 6-20. During the total five-year period of the Board's operation, gross income from broiler sales increased from $33.0 mil-

FIGURE 6-15

PRODUCER-TO-WHOLESALE MARGINS, BROILERS, MONTREAL

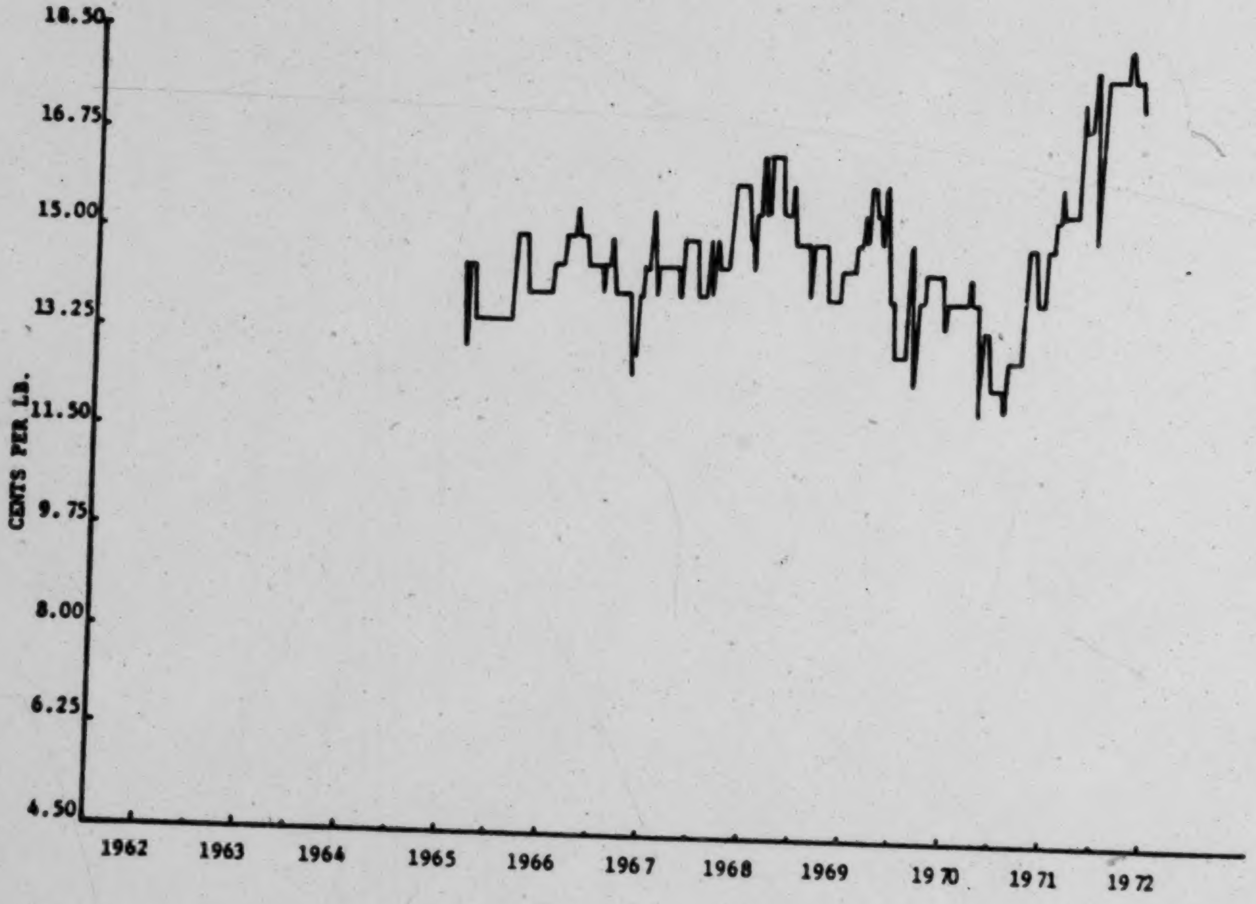


FIGURE 6-16

PRODUCER-TO-WHOLESALE MARGINS, BROILERS, WINNIPEG
1965-72

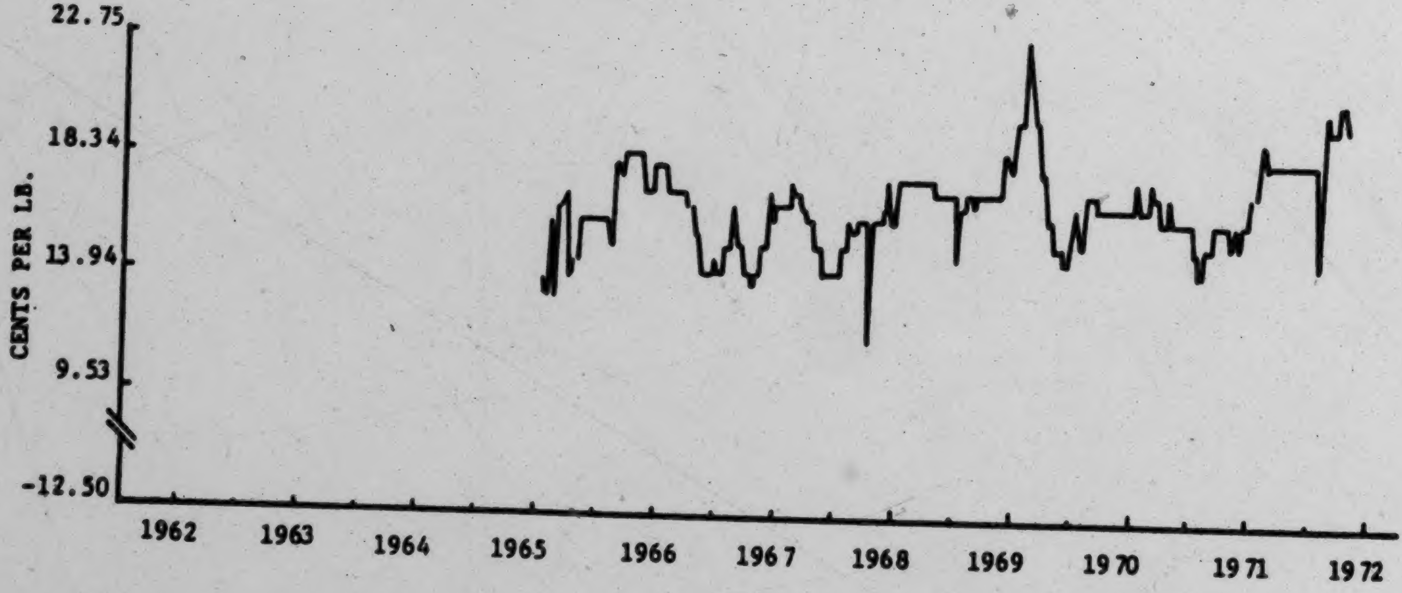


Table 6-20

GROSS INCOME FROM BROILER SALES
POST-BOARD PERIOD
ONTARIO
1959-72

Year	Gross Farm Income from Broilers		
	$ Million	Index (1959=100)	% Change
1959	20.6		
1960	20.8	100.8	+1.0
1961	21.3	103.3	+2.0
1962	26.2	127.2	+22.0
1963	29.2	141.7	+12.0
1964	29.6	143.6	+2.0
1965	33.0	160.2	+12.0
1966	38.5	192.2	+20.0
1967	43.1	209.2	+8.8
1968	46.4	225.2	+7.6
1969	49.3	239.3	+6.2
1970	51.4	249.5	+4.3
1971	54.8	266.0	+6.2
1972	58.1	282.0	+5.7

Source: Estimates on data obtained from the Ontario Broiler Chicken Producers' Marketing Board, *Annual Reports*, 1965-72.

lion in 1965 to $51.36 million in 1970, an increase of 55.7 percent.

Summary

Broiler chicken has been the largest single component of Ontario poultry marketing, accounting for approximately 67.1 percent of all poultry meats produced in Ontario during the 1965-70 period. Average annual earnings from broilers amounted to roughly $50.0 million in the 1960-70 period. The Ontario broiler industry experienced uncontrolled expansion in production during the early 1960's which generated price and income instability for broiler growers in the province. Low prices in 1959-62 caused great concern to the producers who started demanding effective supply controls. This led to the creation of the Ontario Chicken Broiler Producers' Marketing Board which had powers to issue marketing quotas according to an approved marketing plan. Quota policies have been in use in the province since 1965 and have, therefore, generated effects that were conducive to the fulfillment of the Board's objectives. An evaluation of these effects is summarized as follows:

(1) The single feature of the Ontario Broiler Marketing Board was to organize production to equal market demand at a price and to curb corporate takeover of the broiler industry. This was linked with the objective of discouraging the formation of vertical integration in the broiler industry. An increase in vertical integration did not

occur in the Ontario broiler industry after the quota system was set up. The quota transfer policy was conducive to this effect.

(2) Contrary to the primary broiler sector, there had been a higher degree of concentration and integration at the feed manufacturing, poultry processing and hatcheries levels. Primary broiler production, however, was also fairly concentrated with 740 producers producing over 35.0 percent of the total Canadian broiler supplies in 1970.

(3) With quotas being attached to the registered premises and entry into the industry being restricted a tendency for the capitalization of quota rights into the value of real estate was created. The incidence of capitalization could be imagined to have reflected increases in production costs and possibly higher broiler prices.

(4) The Ontario Broiler Chicken Producers' Marketing Board had in general been reasonably successful in stabilizing the supply of broiler chickens marketed in Ontario. With slight fluctuations, though the number of chickens marketed under quota increased, the industry operated with different levels of excess capacity in the industry.

Linked with the supplies of broilers the coefficient of broiler trade position showed that Ontario was a surplus province in broilers until 1968. From 1969 onward it became a deficit province and sustained increasingly large excess capacity and caused persistent unemployment of a considerable proportion of the resources retained in the broiler chicken industry.

(5) Estimates of price stability for the preboard and post-board period indicate that the quota policies of the Ontario Broiler Chicken Marketing Board had been successful in stabilizing broiler prices at the producers' level. But broiler prices averaged well over the pre-board period after the commencement of the quota policies.

(6) The Ontario broiler industry experienced wide fluctuations in margins after the implementation of the quota policies and this suggests the ineffectiveness of the Ontario Broiler Board in stabilizing the margins at a low level. This, however, could be attributed to the inflow of broiler chickens from surplus areas like Quebec. Compared to Ontario, Quebec and Manitoba both showed more stability in margins between producer and wholesale broiler prices.

(7) The effect of the Board's quota and pricing policies had been conducive to an increase in gross income from live sales within a year of the Board's operation. During the total five-year period of the Board's operation, gross income from broiler sales increased from $33.0 million in 1965 to $51.36 million in 1970, an increase of 55.7 percent.

CHAPTER VII

CONCLUSIONS AND SUGGESTIONS

Specific Conclusions

With reference to the study objectives and the hypotheses as outlined in Chapter I, the following conclusions have been drawn from the research and the analysis presented in this thesis.

Hypothesis 1: Marketing boards in Canada evolved from circumstances that were generated by price and income problems in the Canadian agricultural sector during the 1920's.

Conclusion: For several decades before the initiation of marketing boards, agricultural production in Canada was characterized by wide variations in yields and output. Small changes in production brought about disproportionately large changes in producers' prices and incomes. It generated an unstable situation that could be explained by the fact that most Canadian farm products were price inelastic and a rapid increase in their production caused farm prices and incomes to drop rapidly. It made the bargaining position of the farmers weak, a position worsened by the existing imperfect competition or more precisely, oligopoly (few buyers) and monopsony (one buyer), which farmers faced in selling their output in products markets. The circumstances so generated by the price and income problems in the Canadian agricultural sector led to the establishment of marketing boards during the late 1920's and 1930's.

Hypothesis 2: Canadian farmers asserted the need to develop an agricultural marketing policy embodying some features of supply management in order to achieve an enhancement of the countervailing power of the primary producers.

Conclusion: Before the establishment of an organization to employ supply management, Canadian farmers attempted to solve their price and income problems through limitation of various voluntary cooperatives (as early as 1890-1925). They sought increased selling prices through joint action of various kinds and thus gave rise to the formation of several cooperatives. Over time, farmers, in their attempts to secure better prices and increased marketing efficiency through cooperative action, found that there were limits to what could be accomplished by cooperatives. Experience led Canadian farmers to conclude that what they needed was an agricultural marketing policy (to be implemented through an enabling legislation) which would permit a large percentage control of the product. Their actions led to the creation of producer-controlled marketing boards with compulsory powers to control marketings of an individual farm commodity. The evidence and the analysis in the study indicated that the creation of the enabling legislation for farm products under which the various provincial producers' marketing boards were established helped to increase the countervailing power of primary producers.

Hypothesis 3: In addition to supply management, vertical integration can be considered as an alternate route to countervailing power.

Conclusion: Despite the fact that the vertically integrated firms could also enjoy countervailing power and increase their monopoly profits, evidence in the thesis suggests that the farmers preferred the concept of supply management as a means of achieving their objective of increasing countervailing power.

Hypothesis 4: Quota policies have stabilized prices and incomes of producers.

Conclusion: The marketing boards have succeeded in reducing price fluctuations in the broiler sector and the degree of price stability increased at the producers' level after the implementation of quota policies. A similar conclusion is valid for farmers' income levels.

Price stability was achieved at higher producer prices. In a cumulative effect, it was conducive to higher stability and improvement in broiler growers' income.

The principal objective of raising broiler prices and incomes, along with desired stability, was achieved through the introduction of a practice of equitable price treatment which ensured identical minimum prices to producers of the same quality broilers.

Hypothesis 5: Prices of farm products delivered to consumers have risen through the "cost of production" effect of supply or marketing quotas.

Conclusion: The empirical analysis suggests that the marketing quotas as issued by the broiler marketing boards were limited in number and an implicit price was attached to them. It generated "cost effects" in the input market and "price effects" in the product market (under implicit capitalization in the form of increased asset values associated with the specific broiler enterprise). Since minimum producers' prices were linked with the cost of production, the prices of farm products ultimately delivered to the consumers rose through the "cost of production" effect.

Hypothesis 6: A change in the trade position coefficient for each province has occurred because of the direct altering of production and supply volumes.

Conclusion: Ever since broiler marketing quotas have been introduced in the various provinces, the distribution of market shares in broiler production has changed substantially. This has resulted in an increase in interprovincial broiler flows as a result of some provinces that were surplus or at least self-sufficient earlier becoming deficit in supplies due to supply restriction. Quebec, with no marketing quotas during the period covered in this study, improved its market share and remained a surplus province. It exported broilers as far away as British Columbia. A deficit in broiler supplies was linked with the existence of excess capacity since many provinces operated much below their basic quota levels in order to keep producers' prices and income at a higher level.

Hence, the evidence and the empirical estimates indicated a change in the trade position coefficient for each province as a result of the direct altering of production and supply volumes.

Hypothesis 7: A shift in margin distribution between primary producers and wholesalers has occurred.

Conclusion: Evaluation of the quota policies with respect to the stability achieved in margins between the producer and the wholesaler indicated that, although margins stabilized after the broiler marketing quotas were established, the level at which the stability was achieved was higher in the post board period. This suggested that the wholesale broiler prices remained at a higher level; however, the increased margin appeared to be justified by increasing processing and storage costs.

Hypothesis 8: Quota policies have increased market concentration within the production sector but have reduced takeover of primary production units by non-farm firms.

Conclusion: Quota policies of the broiler marketing boards contributed to the increased concentration in the broiler production sector, but curbed the corporate takeover through placing restrictions on the ownership and transfer of marketing quotas. The extent of this conclusion varied from province to province, depending on the nature and magnitude of the quota policies used. For example, in Ontario, where the transfer of quotas or market shares could only go to the producer of under 35,000 birds (considered as an economically viable production unit, allowing a gross sales of at least $100,000.00 each year), the success through the quota transfer policy has been substantiated. Also, in the case of farm sales, a person or corporation already owning a basic quota of 150,000 could not get any further market shares. This has been effective in stopping non-farm corporations from accumulating farms to increase their feed business. It also discouraged the farmer to be forced into bankruptcy if the market could not be acquired. Most provinces had a similar provision in their transfer policy.

In Quebec, where the supply management was delayed, large quantities of broiler production got into non-farm firms' hands. This was patterned on the United States' experience where a total takeover of the broiler business by corporated firms occurred. In Quebec the absence of supply management caused broiler production to increase by 40 percent. Besides, government subsidies and loans to broiler growers caused the broiler production to increase and storage stocks doubled during the 1968-70 period. Government funds were used to bail out over production in the province. The Quebec experience caused by the absence of supply management seemed to create serious price and income problems. These problems have been substantially improved in other provinces by the use of quota policies.

Hypothesis 9: Marketing and production quotas, as used by various marketing boards, have restrictive effects on sectoral growth.

Conclusion: Linked with the policy of supply management, the broiler industry did not expand rapidly. A great deal of excess capacity developed within the existing production resources in the provinces. The restrictive effects on sectoral growth could be associated with several restrictions that were attached to the holding and transfer of marketing quotas and the subsequent increases in production costs. The increases in production costs could be attributed to either the question of economies of scale which could not be achieved because of the upper limit on the holding of marketing quotas or marketing quotas acquiring implicit or explicit values.

General Conclusions

1. Marketing boards in Canada constituted a practical technique for collective bargaining. This technique had substantial appeal to an industry with producers who had sold their products to a few relatively large buyers. The central objectives of marketing boards were to increase the incomes of their members and to stabilize the supply of locally-produced products. If one or more regions that were important producers of a commodity did not participate in a supply management program, the remaining regions could not be completely successful in controlling the supply.

In the specific case of broiler chicken, the Province of Quebec did not have a supply management program and produced about 40 percent of the total Canadian broiler chicken supplies. It made Quebec a surplus province which caused substantial interprovincial movements of broiler chicken in Canada. In this situation, there were serious limitations on what a broiler chicken marketing board could accomplish through a program of supply management. Various provinces therefore imposed import restrictions on products from other provinces which was not a realistic approach.

2. The appeal of a supply management program as used by broiler chicken marketing boards lay not only in management for negotiating purposes, but in the fact that it took into account and dealt with the underlying demand

and supply situation. Quotas on market sales were normally justified on the grounds that the last marginal output was normally surplus. It was crucial in the sense that, in view of the inelasticity of demand for most farm products, this surplus substantially affected the price at which the total supply was sold in the market. It implied that if the surplus could be eliminated, farm incomes could be improved. The effectiveness of bargaining power was therefore dependent on the ability to control supply.

3. Marketing boards, using supply management as a technique of reducing output and raising prices caused additional income that accrued to the owners of the rights to produce and sell broiler chicken in a given market. These rights, in the form of marketing quotas, then acquired capital values and the cost of production rose. The gain accrued almost entirely to the owner of the quotas. From the point of view of the ownership of the resource to which the quota was attached, a supply management program had the result of providing the owner with a tax-free capital gain. From the point of view of the consumer, the increased quota values meant higher prices and, therefore, a resultant welfare loss. If the product prices became too high, the availability of close substitutes limited the amount by which higher prices to consumers could improve prices to farmers. Moreover, when consumers paid higher prices for the regulated product as a result of higher quota values, they spent less on other products.

Thus, in a cumulative order, it created conflicts among producers and marketers of these products for which the demand was implicitly reduced.

4. The creation of marketing boards had effectively organized growers into a quasi-monopoly that was explicitly designed to increase the bargaining power of farmers in order to curb any excesses in the conduct and performance of large integrated firms. However, the assumption of monopoly control did raise serious questions regarding the pattern of behaviour that evolved after the board had resolved the initial problems of over-production, low prices and unsatisfactory incomes.

In cases where there was inelastic demand for particular farm products, the concept of quotas incited a conflict of opinions concerning questions with broad economic implications. Monopoly pricing by the marketing boards raised issues about i) the regressive effects on consumers, ii) the incidence of capitalization of quota rights into the value of unique factors such as real estate, and iii) the barriers to new producers' entry into the industry. A relevant counter-question is whether these constituted a valid criticism of the quota policies pursued by marketing boards.

In Canada, it had been a common experience that any net return from production tended to become capitalized into the fixed factor. This occurred whether the increased returns originated from the early adoption of new technology, from buoyant demand, from market restraints, or from successful sales promotion, etc. Promotion of the adoption of technological innovation had been consistent with economic growth and the earnings which accrued to early adopters were capitalized into a unique factor. Thus, capitalization has remained a fact of life and it was not special to the quotas used by the marketing boards. However, the criticism that capitalization exerted an upward pressure on production costs and raised the level of the market price of the regulated products needs to be considered and some suggestions to solve the problem are required.

To offset some of these alleged criticisms against marketing boards and to provide safeguards for the interest of those affected by the boards' activities, there are already certain arrangements in the regulations and practices of these boards. Producers are protected through their rights of vote in establishing a marketing scheme and through the election of members to the marketing board. Also, producers can demand a vote on the question of revoking a marketing scheme and on amendments proposed by a marketing board. Further, they have the right of arbitration for any grievances they have. Distributors, manufacturers, and processors are protected through representation on the joint committees permitted under the marketing legislations. These committees, in principle, can advise on matters of interest to all parties involved. Consumers' interest, though protected through the committees, needs further protection through independent advisory committees consisting of representatives from all groups concerned. These advisory committees would have the duties of examining and reporting the effects of marketing schemes on consumers and of considering complaints made by consumers.

Suggestions

Based on the conclusions summarized in the preceding section, the following policy suggestions are made:

(1) Although the broiler chicken producers' marketing boards succeeded in achieving price stability at the producer level, the level of broiler prices at which this stability was achieved remained higher in the post-board period. In cases where producers' prices were too high there could be a potential danger that price differential between Canada and the United States would encourage broiler imports into the deficit provinces. With a price differential of more than 8 to 10 cents per pound, there was a likelihood that imports would endanger the successful results of supply management. Despite the product differentiation (Canadian broiler chicken is eviscerated while the U.S. broiler chicken is only dressed and has a yellow skin), trade data suggests that whenever Canadian prices were higher than U.S. prices by more than 8 to 10 cents per pound (to cover the 12½ percent tariff on live birds and 2 cents per pound on broiler meat and three to five cents per pound cost of transportation and other

costs, etc.), there were substantial imports of live birds and also of broiler meat into the Canadian wholesale market. Broiler marketing boards should therefore take into account this factor in fixing their minimum broiler prices to producers.

(2) Related to the question of producers' minimum prices fixed by the respective provincial marketing boards, the recent evidence suggested some discrepancy in maintaining a uniform "spread after feed cost". Miscalculated minimum broiler prices fixed by the marketing boards could defeat the objective of providing a stable and high income to broiler growers.

Wide fluctuations as observed in the estimate of spread between broiler prices and feed cost suggested a lack of correspondence between the weekly broiler prices and the feed costs at the producer level. Broiler marketing boards should be careful in fixing the minimum prices and should attempt to keep them in line with the cost of production. If prices were fixed below the cost levels, it would have an adverse impact on the broiler growers' viability from "the direct loss effect" and if prices were fixed much above the cost levels, it would generate higher prices in the sales of quotas that would ultimately be built into the cost of production structure of the broiler industry. The future cost of producing broilers would be raised and that would be damaging to the competitive position of the industry.

It is imperative, therefore, that the broiler marketing boards devise more sophisticated and continuously revised estimates of the cost of broiler production in each province. Cost data so far have been very scarce and also are not representative of the various categories of broiler producers from the size of quota point of view.

(3) Despite a remarkable expansion in broiler production during 1961-73 period, the broiler industry in several provinces has operated with substantial excess capacity. Efforts of marketing boards should be directed toward the achievement of levels of broiler production with a minimum existence of excess capacity. Simultaneously, the boards should be more instrumental in aggressively promoting the sale and distribution of broiler chicken. New marketing and distribution channels should be developed. Broiler marketing boards should attempt to produce more effective promotional materials in coordination with the wholesalers, retailers and other commodity groups to stimulate interest in broiler chicken and total food consumption.

The promotional activities of broiler marketing boards should not be confined to the domestic market but rather they should explore opportunities in the export markets for Canadian broiler chicken. Canada has already exported some broiler chicken to Cuba, Bahamas, various Latin American countries, Japan and other Pacific areas, but the amount of exports has been very small (less than

1.0 percent of the total Canadian broiler production in 1970-73 period). There is a need to emphasize the exploration of export markets for Canadian broilers. This could now be effectively done by the individual provincial broiler marketing boards or through the proposed National Broiler Marketing Agency.

So far, the marketing boards have left the processing and selling of broiler chicken to the normal channels of wholesale trade. Selling requires knowledge of the total market and at present Canadian broiler marketing boards lack a market-gathering information system to keep them aware of the markets on a daily basis, if not on an hourly basis, for day-to-day sales. The development of this kind of market information, being the prerequisite for efficiency in the market system, is required. The Alberta and Ontario Hog Marketing Boards have developed an efficient information system, which uses a "teletype price reporting mechanism". It can provide an example to the various provincial broiler boards in Canada. The broiler marketing boards should start developing a similar information system in each province and the National Broiler Marketing Agency should cover the national and the international markets.

One immediate requirements in the promotional activities of the broiler marketing boards should be to increase the variety of products offering broiler chicken meat. The stereotype cuts should be substituted with more forms acceptable to consumers. This may require consumer preference research, both in Canada and abroad in export markets, which can be undertaken by coordinating retailers, wholesalers and other consumer-oriented groups. Consumer preferences might be captured if more broiler chicken flows into "further processing". The overall broiler industry would have benefited if the provincial broiler marketing boards concentrated their efforts on: a. promotion, b. upgrading of quality, and c. increasing the variety of products offering broiler chicken meat to the consumer.

(4) Although the quota policies of the provincial broiler marketing boards have been successful in controlling the takeover of broiler production by the non-farm firms, evidence suggests that the level of concentration in broiler production substantially increased. Despite the factor of cost economies associated with large scale production, it cannot be justified that some farms or firms grew much above the optimum level either by acquisition of existing quotas or purchase of new quotas as issued by the boards.

It seems appropriate to suggest that the respective broiler marketing boards should revise their maximum quota limits and devise the policies of the quota transfer in line with the objective of achieving an optimum size of broiler production associated with each quota holder. In the case of quota holders above the average size, it is important to exercise some kind of surveillance, especially with regard to practices that are considered injurious to the industry as a whole.

(5) Realizing the need for cost data in agriculture, the importance of detailed cost studies in broiler chicken production cannot be overemphasized. To date the individual marketing boards have had only limited cost studies made, and these do not represent the broiler producers in each size category. It is important that the respective provincial marketing boards conduct more detailed broiler chicken production cost studies and they must analyze these studies. Also, analysis must be revised more often, since Several cost items (especially feed costs) change often. This additional endeavour would assist the boards in their price-quantity decisions based on cost of production.

(6) The quota system in operation assumes that all growers raise the same size of bird, which in the case of a national plan may not be adequate. Different provinces demand various sized birds. For example, the junior broiler is the bird in demand in Saskatchewan, ranging in size from about 3.2 pounds to 3.6 pounds. The existing quota system expressed in terms of birds gives a definite advantage to the grower of a 4 pound bird as this is the bird that creates maximum trouble with surplus storage stocks.

Under the present system, a man can grow 5,000 more pounds of product on a heavy bird program than he can on a junior broiler program. The problem arises from the experience that everyone wants to raise that bird that is the least in demand. It can be recommended that the quota system should be converted to pounds per cycle instead of birds per cycle. To give an example, a grower whose basic quota is 10,000 birds may have it expressed as 36,000 pounds if the average bird's weight is 3.6 pounds.

Converting the quota system from a bird to pound basis would make pricing differentials necessary. The man who grows a junior broiler can do just as well financially as the man growing a heavy broiler. It would allow a great measure of flexibility in the planning of programs between growers, hatcheries and processors. If the grower and processor agree that a 4 pounds bird is called for (and assuming the board in a province has allowed 100 percent production), the grower can raise 9,000 birds to make the total of 36,000 pounds. However, if they have agreed on an average of only 3.3 pounds, he could place 10,900 chicks.

Experience suggests that junior broilers (3.2 pounds to 3.6 pounds) are more in demand and when heavier birds are placed on the market, it creates stock building. Quebec with no supply management, had a tendency to produce heavier birds and thus created problems of surplus broiler chicken in the form of storage stocks. This situation can be improved by introducing quotas that are expressed in terms of weight rather than birds.

(7) If steady growth of the Canadian broiler industry is to be achieved without being punctuated by violent setbacks each province should have an intelligent forward planning program linked with a storage program. The

fundamental problem is to keep supplies in line with demand and for this an effective market intelligence division is necessary to develop techniques for predicting, with reasonable accuracy, future levels of supply and demand. This division should be created in the National Broiler Marketing Agency and it should be able to present its members with a reasonably good picture of supply conditions being able to predict supply, with a percent accuracy, at least 6-7 months prior to the time the broiler chickens are marketed. Techniques for such accurate prediction of demand have not yet been developed in Canada, which makes the forward demand predictions educated guesses. This situation becomes complicated because of the increasing dominance of the supermarket system of retail marketing. This seems to result in retailers administering demand for broiler chicken rather than simply reflecting normal consumer demand patterns to the broiler chicken growers.

(8) It is imperative that the multiplier effects of inducing poultry (broiler chicken) processing should be well recognized. In terms of an input-output analysis, the author has estimated the overall impact (direct, indirect and induced) of generating a $1.0 million increase in the final demand for poultry (broiler chicken) meat in Canada. It is estimated that $4.334 million worth of economic activity will be generated in the Canadian economy with $1.435 million income generated in the lower household sector in terms of wages and salaries. supplementary labour income,

net income of incorporated business and investment income (Appendix G). In view of high multiplier effects, it is important that emphasis should be given to the processing of broilers in areas where such facilities are still not well developed.

(9) The degree of success of supply management practices was occasionally hampered by the interprovincial flows of broiler chicken. Frequently, import restrictions were initiated by various provinces with a view of safeguarding the positive effects of their supply management programs. These import restrictions created several undesirable effects and a sharp restriction on imports was not a realistic approach. In view of this problem, it can be suggested that the proposed National Broiler Chicken Marketing Agency should be instituted in order to solve the problems generated by the inter-provincial movements of broiler chicken, especially from Quebec.

The National Broiler Marketing Agency should have the following objectives:

(a) To provide a means for monitoring interprovincial and export trade.

(b) To provide necessary and desirable interprovincial and export trade.

(c) To provide necessary and desirable inter-provincial trade on a competitive basis.

(d) To establish outlets for surplus products in any province or region without using a two-price or dumping system.

(e) To set up a sales organization and pricing system available to all so that consumers will have access to the product at a fair and competitive price.

(f) To establish a body with the responsibility of locating and competing for export markets.

It is unwise, however, to advocate a program of supply management at the national level without being specific about type of administration, specific technique of control, and changes that would be made in the revision of market shares from time to time. It is imperative to recognize geographic limitations and distortions of comparative advantage between provinces before deciding upon the initial as well as the revised market shares for broiler chicken. Allocation of market shares should be made in a way that fully considers these limitations and distortions. Intensive empirical research is required to ascertain the nature and magnitude of these limitations and distortions.

(10) While some safeguards to protect the interst of consumers at the provincial level are provided in the provincial marketing legislations, it is important to create a more effective control at the national level on the operation of the National Broiler Chicken Marketing Agency through an independent Committee of investigation with the duties of reporting on consumer reports and on complaints from persons other than consumers. To strengthen the work of this committee at the national level,

independent advisory committees should be appointed in each province. These committees would report the effects of marketing schemes on consumers and would consider complaints made by consumers and other groups.

(11) Thre is a need to develop a rather sophisticated and comprehensive statitsitcal information service both at the provincial and national levels. Through a computerized reporting system, the provincial boards and the agency should be able to provide producers with data on prices, volume marketed and the expected demand in coming weeks. In addition to day-to-day market information, the statistical service should be asked to carry out a continuous survey of producers' intentions, consumers' attitudes, chick placements and orders, slaughterings, sales and prices at wholesale and retail levels, and obtain regular information on the status of overseas markets. The composite of daily reporting and survey information should constitute the basis for adjusting daily prices (based on cost of production) and should provide information to be used at weekly market reviews of a market advisory committee (made up of members of the board and representatives of other elements of the industry including consumers).

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APPENDIX A

SOME IMPORTANT HISTORICAL SEQUENCES IN THE DEVELOPMENT OF AGRICULTURAL ORGANIZATIONS IN CANADA

Earliest record of an organized attempt can be traced back to 1815-16, when the end of European and American wars led to the consequent fall in farm prosperity induced by military contracts for beef, pork, and hay. This, combined with crop failures and an influx of field mice in 1815-16, caused the beginning of agricultural organizations in Canada. Some of the most important organizations can be recorded as follows:

Year	Particular Development
Pre-Confederation Period	
1816	Agricola and the Central Board of Agriculture in Nova Scotia designed to achieve a functional relationship between agriculture and the commerce: these were designed after Dublin Society in Ireland, the Highland and Society of Scotland, the British Board of Agriculture, and agricultural societies in Germany, France, Italy and the United States. By 1824, there were 30 local agricultural societies.
1826	Continuation of Central Board charter refused by the Nova Scotia Assembly. New Central Board of Agriculture instituted again in 1841, lasted till 1885 with a few lapses in between.

In Lower Canada, various district agricultural societies were organized on the same pattern as the Central Board of the British Kindgom.

1831	District agricultural societies of Quebec (Montreal and Three Rivers).
1834	Act of Lower Canada created Quebec Agricultural Society, doing missionary-type work in agriculture.

1837 Upper Canada Act to assist agriculture remained in force till 1841.

1844-45 Act for Lower Canada providing grants to agricultural societies.

1847 Agricultural Association of Upper Canada connected with district agricultural societies.

1847 Agricultural Association of Lower Canada to incorporate agricultural society.

1851 Legislation to create hierarchy of agricultural institutions with balanced coordination in both Lower and Upper Canada.

1856 New Brunswick faced a commercial crisis and the legislature formed a committee that submitted its recommendations.

1860 On the recommendation of the committee, New Brunswick also established a Central Board of agriculture.

Post-Confederation Period

The British North America Act--Dominion Government shared concurrent jurisdictions with provinces over agriculture. Provinces left in charge of agricultural societies and boards and each province possessed substantial commercial functions.

1867-1930 Dominion agricultural policy concerned chiefly with agricultural commerce. This was the dawn of government's main concern and involvement in the marketing sector for Canadian farm products. So far, main emphasis of organization approach was with reference to production and credit requirements.

1872 Homestead policy instituted and intensified.

1900 Farmers began to form cooperatives for marketing farm products.

1900-13 Province-wide cooperative elevator cooperatives established in each of the three Prairie Provinces; 1913 Okanagan United Growers' Cooperative.

1917 United Grain Growers by amalgamation of these cooperative elevator companies.

Post-War Period

1916-24 Extensive failure of cooperatives due to low agricultural prices.

1923 Okanagan United Grain Growers' Cooperative reorganized into a large selling cooperative.

1925 Three large grain pools handling about half of prairie grains were instituted.

Failure of cooperatives led to interest in come compulsory marketing organizations.

1927 First British Columbia Producer Marketing Board.

Depression Period

1931 The Marketing Act authorizing the creation of marketing boards in B.C. was declared unconstitutional because: (1) Province cannot regulate interprovincial trade. It was Dominion Government jurisdiction, (2) Levy imposed by B.C. Marketing Act was an indirect tax on producer.

1934 Depression worsened farmers' condition and they pressed the Federal Government to enact some legislation for orderly marketing of Canadian farm products. The Natural Products Marketing Act (Canada 1934) was passed in 1934 and instituted the Dominion Marketing Board. This remained briefly in existence. Based largely on patterns of Australian and British marketing boards.

By 1935 twenty-two marketing schemes recommended to the Governors-in-Council of B.C., Ontario and Nova Scotia.

1935-36 While these schemes were considered, the Supreme Court of Canada declared the Marketing Act as *ultra vires*.

1937 Ontario and New Brunswick followed B.C. and had their own Marketing Acts.

1938 Chamber of Agriculture recommended that each province pass an act of its own and that the Dominion Government pass enabling legislation that would allow for the control of interprovincial and international trade.

By 1940 all provinces, except Quebec, have enacted some form of enabling legislation for the marketing of farm products.

Canadian Federation of Agriculture again approached the Federal Government to enact some Federal legislation; drafted out and presented a short bill for the government's approval.

By this time war broke out and invocation of the War Measures Act gave the Federal Government power to regulate and control the farm products. This power was even greater in scope than that envisaged in proposed marketing legislation.

Post-War Period

1945 At the end of the war, government invited representatives of farmers' organization to draft a short bill for submission to Parliament.

1949 Out of these deliberations emerged an Agricultural Products Marketing Act of Canada (APMA), granting to provincial boards powers in interprovincial and export trade.

1957 Amendment in APMA allowing a delegation of authority to raise levies on a provincial basis.

Therefore, provinces got authority from the Federal Government to institute provincial marketing boards and thus there evolved a combination of Federal legislation and Provincial legislation.

1971-72 C-176 Bill to establish a National Marketing Council.

Sources: Vernon C. Fowke, *Canadian Agricultural Policy--The Historical Pattern* (Toronto: University of Toronto Press, 1946), Chs. 4, 5, 6 & 9.

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APPENDIX B

FEDERAL LEGISLATION
AGRICULTURAL PRODUCTS MARKETING ACT OF CANADA 1949
(Non-Administrative Body)

And Subsequent Dates of the Inception of Provincial Marketing Legislation

NAMES, DATES AND DESCRIPTION OF THE MARKETING LEGISLATION IN EACH OF THE TEN PROVINCES

Nova Scotia	Name	First Marketing Legislation 1946 - Natural Products Mktg. Act, 1962
	Administrative body	- Provincial & Local Boards
	Government Representative	- Solely on Provincial Mktg. Board
Nfld	Name	First Marketing Legislation 1970 - Newfoundland Agrc. Mktg. Act
	Administrative body	- Provincial & Local Boards
	Government Representative	Solely on Provincial Mktg. Board
P. E.I	Name	First Marketing Legislation 1940 The Marketing Act, 1963
	Administrative body	- Provincial & Local Boards
	Government Representative	Solely on Provincial Mktg. Board
N.B	Name	First Marketing Legislation, 1937 - Natu[illegible]Products Control Act, 1952
	Administrative body	- Provincial & Local Boards
	Government Representative	- Solely on Provincial Mktg. Board
Que	Name	First Marketing Legislation 1956 Quebec Agriculture Mktg. Act, 1960
	Administrative body	- Provincial & Local Boards
	Government Representative	Solely on Provincial Mktg. Board
Ontario	Name	First Marketing Legislation 1937 - Farm Products Marketing Act, Revised 1963
	Administrative body	- Provincial & Local Boards
	Government Representative	
Manitoba	Name	First Marketing Legislation 1939 The Natural Products Mktg. Act, 1962
	Administrative body	Provincial & Local Boards
	Government Representative	Solely on Provincial Mktg. Board
Saskatchewan	Name	First Marketing Legislation 1945 Natural Products Mktg. Act, 1963
	Administrative body	Provincial & Local Boards
	Government Representative	Solely on Provincial Mktg. Board
Alta	Name	First Marketing Legislation 1955 The Marketing of Agricultural Products Act, 1957
	Administrative body	Provincial & Local Boards
	Representative	Solely on Provincial Mktg. Board
B.C	Name	First Marketing Legislation 1934 Natural Products Mktg. Act, 1960
	Administrative body	Provincial & Local Boards

APPENDIX C

THE FARM PRODUCTS MARKETING AGENCIES ACT, 1972

An Act to establish the National Farm Products Marketing Council and to authorize the establishment of national marketing agencies for farm products.

(Assented to 12th January, 1972)

Her Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:

SHORT TITLE

Short Title 1. This Act may be cited as the *Farm Products Marketing Agencies Act*.

INTERPRETATION

Definitions 2. In this Act,

"Agency" (a) "agency" means an agency established pursuant to subsection (1) of Section 17;

"Council" (b) "Council" means the National Farm Products Marketing Council established by Section 3;

"Farm Product" (c) "Farm product" for the purpose of Part I, means any natural product of agriculture and any part of any such product and, for the purpose of the other provisions of this Act, means

(i) eggs, and poultry, and any part of any such product, and

(ii) any other natural product of agriculture and any part of any such product in respect of which the Governor-in-Council is satisfied, as a result of declarations by provincial governments following plebiscites, or otherwise, that the majority of the producers thereof in Canada is in favour of the establishment of an agency under Section 17 with powers relating to that product;

"Marketing" (d) "Marketing", in relation to any farm product that is not a regulated product, includes selling and offering for sale and buying, pricing, assembling, packing, processing, transporting, storing and any other act necessary to prepare the product in a form or to make it available at a place and time for purchase for consumption or use, and in relation to a regulated product, includes only such of the above acts as are specified in the marketing plan relating to the regulated product;

"Marketing Plan" (e) "Marketing plan" means a plan relating to the promotion, regulation and control of the marketing of any regulated product in interprovincial or export trade that includes provision for all or any of the following:

(i) the determination of those engaged in the growing or production of the regulated product for interprovincial or export trade and the exemption of any class of persons so engaged from the marketing plan or any aspect thereof;

(ii) the specification of those acts that constitute the marketing of the regulated product and of those persons engaged in its marketing, as so specified, in interprovincial or export trade, and for the exemption of any class of persons so engaged from the marketing plan or any aspect thereof;

(iii) the marketing of the regulated product on a basis that enables the agency that is implementing the plan to fix and determine the quantity, if any, in which the regulated product or any variety, class or grade, thereof may be marketed in interprovincial or export trade by each person engaged in such marketing thereof and by all persons so engaged, and the price, time and place at which the regulated product or any variety, class or grade thereof may be so marketed;

(iv) the pooling of receipts from the marketing of the regulated product or any variety, class or grade thereof in interprovincial or export trade and the operation of pool accounts including provision for a system of initial, interim and final payments to producers and deduction from the pool of the expenses of the operation thereof;

(v) a system for licensing of persons engaged in the growing or production of the regulated product for, or the marketing thereof in, interprovincial or export trade, including provision for fees, other than fees related to the right to grow the regulated product, payable to the appropriate agency by any such person in respect of any licence issued to him and for the cancellation or suspension of any such licence where a term or condition thereof is not complied with; and

(vi) the imposition and collection by the appropriate agency of levies or charges from persons engaged in the growing or production of the regulated product or the marketing thereof and for such purposes classifying those persons into groups and specify the levies or charges, if any, payable by the members of each such group;

"Minister" (f) "Minister" means the Minister of Agriculture; and

"Regulated Product" (g) "regulated product" means any farm product to the extent that it is grown or produced,

(i) anywhere in Canada, if an agency is authorized to exercise its powers in relation to any such product grown or produced in Canada, or

(ii) in any region of Canada designated in the proclamation that authorizes an agency to exercise its powers in relation to any such product grown or produced in that region, or in any such region and anywhere in Canada outside that region for shipment into that region in interprovincial trade and not for export, where the proclamation that authorizes the agency to exercise its powers in relation to such product so provides.

APPENDIX D

THE ONTARIO BROILER CHICKEN PRODUCERS' MARKETING BOARD
POLICY STATEMENT NO. 15
RE: OWNERSHIP OF QUOTAS

(1) It is the present policy of the Board to allot the basic and marketing quotas for any crop of broiler chickens to the person who is the owner of a registered building and the land on which it is erected (Hereinafter referred to as "the registered premises") in respect of which the quotas are allotted.

(2) When the registered premises are sold, the Board proposes to allot the basic and marketing quotas for the growing of broiler chickens allotted next following the completion of the sale to the next owner.

(3) In the case of the transfer of ownership of the registered premises, the new owner must complete and sign an application in writing for the allotment of the quotas on a form approved by the Board and must file with the Board evidence of ownership, in the form of a registered deed, an agreement for sale, a final order of foreclosure or Letters Probate of the will of a deceased owner of the registered premises, duly registered in the Registry Office or filed in the Land Titles Office of the county or district in which the premises are situated.

(4) In the case of a lease of the registered premises, both the owner and the lessee must complete and sign an application in writing for the allotment of a marketing quota on a form approved by the Board and must file with the Board a duplicate original of the Lease.

(5) Upon the termination of the lease of the registered premises, the Board proposes to allot the basic and marketing quotas for the crop of broiler chickens allotted next following the termination of the lease to the owner of the registered premises, unless both the owner and the lessee complete and sign an appli-

cation in writing on a form approved by the Board to allot the quotas to the lessee and file with the Board a duplicate original of a renewal of the lease.

(6) Where a transfer of ownership or a lease of the registered premises is completed after the basic and marketing quotas for any crop of broiler chickens have been allotted by the Board and it is intended that the crop be marketed by the new owner of the lessee, both the former owner and the new owner of the registered premises in the case of a transfer of ownership, and the owner and the lessee of the premises in the case of a lease, must complete and sign an application for the transfer of the quotas on a form approved by the Board.

(7) Where the owner of the registered premises is prevented from continuing to produce broiler chickens in a building in respect of which the quotas were allotted by reason of the destruction of the building by fire, lightning or tempest, the owner of the registered premises may complete and sign an application in writing on a form approved by the Board for the allotment of the quotas in respect of a new building and the Board may allow the quotas in respect of the new building on condition that no quotas will thereafter be allotted in respect of the destroyed building.

(8) Where the owner of a registered premises is prevented from continuing to produce broiler chickens in building in respect of which the quotas were allotted by reason of valid legislative prohibition on the expropriation of the building, the owner may complete and sign an application in writing on a form approved by the Board for the allotment of the quotas in respect of a new building on a different parcel of land.

(9) The forms of application referred to in paragraphs 4, 5, 6, 7, 8 in this Policy Statement will be furnished by the Board to any applicant on request.

(10) Where the Board has allotted basic and marketing quotas to the same allottee in respect of two or more buildings, the allottee may produce his marketing quotas in any or all of the buildings so long as he is the owner or the lessee of the buildings.

APPENDIX E

CONCENTRATION AND ITS MEASUREMENT: SOME THEORETICAL CONSIDERATIONS

Tendencies towards an increasing degree of concentration have attracted vast attention on the part of economists. Consequently, many different measures have been suggested in order to measure concentration over time. Some of the most commonly used methods and models are stochastic models of changes in industrial structure, comprising analytical models and simulation models. As techniques, however, the most frequently used measures are: (1) arithmetic mean, (2) variance, (3) concentration ratios, including the computation of the joint market share of the n largest firms, (4) related to the concentration curves, the Lorenz curve, which, unlike the concentration ratio, takes the distribution of all firms into account, (5) Herfindahl's index, consisting of the sum of the squared market shares (Pi) of all firms and may be expressed as follows:

$$HH = \sum_{i=1}^{N} P_i^2 \qquad 0 \le HH \le 1 \qquad \text{(E-1)}$$

The limiting values of both Toreny ratio and Herfindahl's index are 0 and 1, (6) Hall and Tideman Index being closely related to Herfindahl's. Hall and Tideman (HT) can be expressed in the following way:

$$HT = 1/(2 \sum_{i=1}^{N} i\, P_i - 1) \qquad 0 \le HT \le 1 \qquad \text{(E-2)}$$

(7) Entropy was first used in physics and was subsequently suggested for measuring business concentration. It is formulated as:

$$H = \sum_{i=1}^{N} P_i \log_2 P_i$$ where the limiting values are

zero and $\log_2 N$. Zero implies a monopoly situation and $\log_2 N$ implies that all firms have the same market share. (8) For a small population, the use of Horowitz and Horowitz is suggested. It is expressed as:

$HR = H\ (\mathrm{Log}_2 N)$, the limiting values again being 0 and 1.

Analytical Models

Beside these measures, analytical and simulation models can be used. Analytical models may use either the discreet size or continuous size. Simon and Bonini[1] deal with a population of firms arranged in size classes. This model assumes that: (1) the law of proportionate effect is valid, and (2) new firms are born at a relatively constant rate in the lowest size class. Given these assumptions, Simon shows that the process moves towards a steady state. The distribution of firms in this state can be approximated by a distribution referred to as Yule distrubution. The function of this distribution can be expressed as:

$$f(S) = C\beta(S, e + 1) \qquad (E\text{-}3)$$

where:

S = firm size $(S\text{-}0)$,

e = parameter,

C = normalizing constant.

$\beta(S, e+1)$ is the beta function of S and $(e + 1)$ can be written as:

$$\int_0^1 \lambda^{S-1} (1-\lambda)\ d \qquad (E\text{-}4)$$

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[1] C. P. Bonini, *Simulation of Information and Decision Systems in the Firm* (Englewood Cliffs, N.J.: Prentice Hall, 1963); and H. A. Simon, "Comment: Firm Size and Rate of Growth," *Journal of Political Economy*, 72 (February, 1964).

and parameter e may be defined as:

$$e = 1/(1-\lambda)\ \frac{g}{G}$$

where:

g/G taking values between zero and one,

g = the net contribution of entering firms, i.e., sizes of entering firms minus sizes of firms that exist,

G = the net growth of all firms.

Similarly, models using continuous size can be reviewed. These models produce a distribution that is frequently used in describing size distribution, known as the "log normal distribution."[1] As such, the change in size between two periods may be written as:

$$(S_t - S_{t-1})/S_{t-1} = e_t \qquad \text{(E-5)}$$

where:

S_t = the size of a firm at time t,

e_t = a random variable.

Summing over T time periods we obtain:

$$\sum_{t=1}^{T} (S_t - S_{t-1})/S_{t-1} = \sum_{t=1}^{T} e_t \qquad \text{(E-6)}$$

One of the consequences of this model is that the variance increases steadily over time, which means an increasing degree of concentration over time.

Using these models, predictions may be made about industrial structure at specific points of time.

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[1] This means that the logarithm of values are normally distributed.

Simulation Models with Descreet Size

Two processes are involved. The sizes of firms and exits out of the population are determined by a transition matrix. Entries, however, are governed by a mechanism of their own. The basic method for estimation in this context is to proceed as follows:

1. The number of firms during the observation period is recorded.

2. The estimate of the probability that the firms enter is expressed as:

$$p(m) = \sum_{t=1}^{T} b_t/T \qquad \text{(E-7)}$$

where:

b_t = 1, if m firms enter during period t, otherwise = 0,

T = period of estimation.

3. The probability that one of the entering firms will go into the Jth class is thus expressed as:

$$p_j = \sum_{t=1}^{T} A_{Jt} / \sum_{J=1}^{nc} \sum_{t=1}^{T} A_{Jt} \qquad \text{(E-8)}$$

where:

A_{Jt} = the number of new firms entering the Jth class in period t,

nc = the number of classes.[1]

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[1] Another short method is as follows:

(i) Observe the number of entering firms during the observation period.

(ii) Determine the range of entries, i.e., the largest number of entries minus the smallest number of entries.

(iii) Regard all events within the range as equally probable.

(iv) Probability that m firm enters is then $p(m)-1/Q+1$ where Q is the range of the number of entries.

In this way, the number of firms to enter is determined from a uniform distribution.

Simulation Models with Continuous Size[1]

These models contain three basic components:

1. A mechanism determining changes in size.

2. An exit mechanism.

3. An entry mechanism.

Differentiating it from the discreet model, one more mechanism is added--the exit mechanism. In the discreet model this was included in the transition process, here it is a process in itself.

There are two main assumptions in the model:

1. All firms are influenced by the same mechanism, and

2. The mechanisms (law of proportionate effect) are constant over time.

Now the mechanism determining changes in size is a distribution which expresses the probability of a certain relative change during one year. Under the validity of assumption 2, the distribution is expected to have normal shape.

The next mechanism, as introduced here, is similar to the entry mechanism. It contains one distribution determining the number of firms to exit and one distribution which determines their sizes. The entry mechanism also contains two probability distributions: (1) a distribution showing the probability of a certain number of firms entering, and (2) a distribution expressing the probability that an entering firm will be of a certain size. The estimation procedure can be outlined as follows:

$$Pg = \sum_{t=1}^{T} \sum_{i=1}^{Wt} A_{itg} / \sum_{t=1}^{T} W_t \qquad \text{(E-9)}$$

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[1] A model using discrete size uses only a rough measure of size, some information on size being left out. In some cases more complete information on firm sizes in the distribution may be desirable. In these instances, a simulation model using continuous size can be used.

where:

Pg = the probability of a change in size by g percent,

A_{itg} = 1, if the largest integer value $(G_{it} + 0.5) = g$, otherwise, = 0.

G_{it} = the change in size occurring in firm i during period t,

W_t = the number of firms in period t,

T = the period of estimation.

The probability that an existing firm will have size S will be estimated as:

$$P^*(S) = \left\{ \sum_{t=1}^{T} c_t(S) \right\} / \left\{ \sum_{t=1}^{T} d_t \right\} \qquad \text{(E-10)}$$

where:

$P^*(S)$ = the probability that a firm which exists will have size S,

$C_t(S)$ = 1, if a firm of size S exits in period t, otherwise = 0,

d_t = the number of firms that exit in period t.

Similarly, the probability that an entering firm will have size S can be estimated as follows:

$$R^*(S) = \sum_{t=1}^{T} ht\ (S) \ / \ \sum_{t=1}^{T} q_t \qquad \text{(E-11)}$$

where:

$R^*(S)$ = the probability that an entering firm will have size S,

$h_t(S)$ = 1, if a firm of size S enters in period t, otherwise = 0,

q_t = the number of firms entering in period t.

APPENDIX F

ALLOCATION OF MARKETING QUOTAS
ALBERTA BROILER GROWERS' MARKETING BOARD

Dates			Quotas
Sept. 6/66	Effective	Nov. 28/66	90%
Nov. 4/66	"	Feb. 11/67	100%
Jan. 30/67	"	Feb. 27/67	105%
Mar. 21/67	"	Apr. 17/67	110%
June 8/67	"	July 3/67	95%
July 25/67	"	Aug. 28/67	80%
Oct. 31/67 continued			80%
Dec. 22/67	Effective	Jan. 29/68	90%
Feb. 19/68	"	Mar. 18/68	100%
Apr. 1/68	"	Apr. 22/68	105%
June 4/68	"	July 1/68	95%
June 26/68	"	July 29/68	90%
Aug. 6/68	"	Sept. 2/68	80%
Oct. 23/68	"	Nov. 18/68	90%
Dec. 11/68	"	Jan. 6/69	100%
Mar. 25/69	"	Apr. 21/69	100%
July 3/69	"	July 28/69	100%
Sept. 3/69	"	Sept.25/69	85%
Oct. 29/69	"	Nov. 24/69	100%
Jan. 21/70	"	Feb. 16/70	105%
July 2/70	"	Aug. 3/70	100%
Sept. 2/70	"	Sept.28/70	85%
Nov. 20/70	"	Dec. 28/70	95%
Jan. 4/71	"	Feb. 1/71	95%
Jan. 5/71	"	Mar. 1/71	105%
Mar. 1/71	"	Mar. 29/71	100%
May 5/71	"	June 1971	90%
June 30/71	"	Aug. 9/71	88%
Sept. 8/71	"	Oct. 4/71	88%
Nov. 12/71	"	Dec. 13/71	100%
Dec. 21/71	"	Feb. 10/72	105%
Feb. 11/71	"	Mar. 6/72	110%
June 14/72	"	July 17/72	100%
Nov. 9/72	"	Dec. 11/72	110%

Source: The Alberta Broiler Chicken Growers' Marketing Board. unpublished data. 1973.

APPENDIX G

IMPACT OF AN INCREASE OF $1.0 MILLION IN FINAL DEMAND SECTOR IN POULTRY (BROILER CHICKEN) INDUSTRY--CANADA

(INPUT-OUTPUT ANALYSIS)[1]

Income (Household Sector)		
Wages and Salaries		$ 797,027
Supplementary Labor Income		42,822
Net Income of Unincorporated Business		461,154
Investment Income		134,259
	Total	$1,435,261
Activity (Business Sector)		
Gross Production		$4,292,962
Subsidies		42,025
	Total	$4,334,986
Revenues (Government Sector)		
Commodity Taxes		$ 123,236
Non-Commodity Taxes		112,372
Government Goods and Services		4,080
Resource Taxes		8,391
Import Duties		441
Personal Income Taxes		121,036
Corporation Taxes		89,781
Subsidies		-42,025
Other Transfers from Households		71,015
	Total	$ 488,328

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[1] Estimates of direct, indirect and induced effects obtained by constructing an Input-Output table, based on 1966 coefficients as used by Input-Output Division, Statistics Canada, Ottawa, according to the Standard Industrial Classification.